联合国

气候变化框架公约

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临时议程项目 7 (b)
《京都议定书》之下的方法学问题
与温室气体清单有关的问题

在第 14/CP.11 号决定规定纳入之后更新的《气候公约》年度清单报告指南

秘书处的说明

概　要

本文件载有完整的、经更新后的“《公约》附件一所列缔约方国家信息通报编制指南，第一部分：《气候公约》年度清单报告指南”，包括对缔约方会议第十一届会议通过的土地利用、土地利用的变化和林业类别的修订。这份文件是秘书处应缔约方会议的请求编写的，以便利附件一缔约方进行清单报告工作。

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目　录

导　言

A. 任　务

1. 缔约方会议在第 14/CP.11 号决定中通过了报告土地利用、土地利用的变化和林业类别的通用报告格式表及其说明。缔约方会议决定每个《公约》附件一所列缔约方(附件一缔约方)应采用这些表格提交 2007 年及以后各年应提交的年度清单。

2. 缔约方会议在同一决定中还请秘书处把这些关于土地利用、土地利用的变化和林业的表格及技术上所作的有关修改纳入第 18/CP.8 号决定通过的“《公约》附件一所列缔约方国家信息通报编制指南，第一部分：《气候公约》年度清单报告指南”(下称“《气候公约》年度清单报告指南”)。

B. 本说明的范围

3. 本文件载有用于所有清单部门的完整的、经更新后的《气候公约》年度清单报告指南。《气候公约》年度清单报告指南的这次更新是要反映缔约方会议在第 14/CP.11 号决定中商定的与土地利用、土地利用的变化和林业有关的修订，并更正指南先前发表(FCCC/SBSTA/2004/8)以来发现的格式差错和其他差错。

《公约》附件一所列缔约方国家清单报告编制指南，
第一部分：《气候公约》年度清单报告指南

A. 目　的

1. 《气候公约》年度清单报告指南的目的是：

(a) 协助《公约》附件一所列缔约方(附件一缔约方)履行根据《公约》第四条和第十二条承担的义务，并协助《京都议定书》缔约方准备履行根据《京都议定书》第三条、第五条和第七条承担的义务；

(b) 便利年度国家清单的审议工作，包括编写技术分析报告与综合文件；

(c) 便利清单信息的核实、技术评估和专家审评工作。

B. 原则和定义

2. 国家温室气体清单(以下简称清单)应具有透明度、一致性、可比性、完整性和准确性。

3. 清单的编制应按以下第 9 段所述，采用由缔约方会议商定的可比方法。

4. 在《气候公约》年度清单报告指南的范围内：

透明度是指，对清单使用的假设和方法应作出清楚的解释，以便利清单的用户复验和评估报告的信息。清单的透明度是信息的通报和审议工作成功与否的关键；

一致性是指，一份清单应与其他年份清单的所有内容保持内在一致性。如果对基年和其后所有年份均采用相同的方法并且采用一致的数据集估算源排放量或汇清除量，则这份清单即具备了一致性。在第 15 和第 16 段所述的某些情况下，对不同年份使用不同方法的清单，如果已按照气候变化专门委员会(气专委)《国家温室气体清单的良好做法指导意见和不确定性的掌握》和《关于土地利用、土地利用的变化和林业的良好做法指导意见》[1] 以透明方式作了重新计算，可视为具有一致性；

可比性是指，附件一缔约方在清单中报告的排放量和清除量估计数在附件一缔约方之间应是可比较的。为此目的，附件一缔约方应使用缔约方会议同意的方法和格式估算和报告清

[1] 本文件所称“气专委良好做法指导意见”是指气专委《国家温室气体清单方面良好做法指导意见和不确定性的掌握》和气专委《关于土地利用、土地利用的变化和林业的良好做法指导意见》。在只指后者时，使用《关于土地利用、土地利用的变化和林业的良好做法指导意见》一词。

单。不同的源/汇类别的划定应沿用修订的《1996 年气专委国家温室气体清单编制指南》[2] 和《关于土地利用、土地利用的变化和林业的良好做法指导意见》的简表和部门表格的划分；

完整性是指，一份清单应包括气专委指南中载列的所有源和汇和所有气体，以及因是各个附件一缔约方所特有而可能未纳入气专委指南中的其他现有相关的源/汇的类别。完整性还指一附件一缔约方对源和汇的全部地理覆盖；[3]

准确性是指，排放量或清除量估计数准确性的相对尺度。估计数应当准确，即，在可判断的前提下估计数应全面保证既不高于也不低于实际排放量或清除量，并尽可能减少不确定性。应遵照气专委良好做法指导意见，采用适当的方法，以便提高清单的准确性。

5. 就本指南而言，编制温室气体清单所用的通用术语定义就是气专委良好做法指导意见中的定义。

C. 范 围

6. 按照第 11/CP.4 号决定和缔约方会议的其他有关决定的规定，《气候公约》年度清单报告指南所涉及的范围，包括年度清单和国家信息通报中所载清单的温室气体排放量和清除量的估算和报告。

7. 一次提交的年度清单材料应包含第 38 至 43 段及第 44 至 50 段分别述及的国家清单报告和通用报告格式。

D. 基 年

8. 应将 1990 年定为估算和报告清单的基年。根据《公约》第四条第 6 款的规定和第 9/CP.2 和第 11/CP.4 号决定，允许下列正在向市场经济转型的附件一缔约方采用 1990 年以外的某一年或若干年作为基年，安排如下：

保加利亚：	1988 年
匈牙利：	1985 至 1987 年的平均数
波兰：	1988 年
罗马尼亚：	1989 年
斯洛文尼亚：	1986 年

E. 方 法

方法学

9. 附件一缔约方应采用气专委指南，估算和报告《蒙特利尔议定书》未予管制的温室

[2] 本文件中称“气专委指南”。

[3] 根据每个附件一缔约方的《公约》批准、接受、核准或加入书而定。

气体人为源排放量和汇清除量。附件一缔约方在编制这类气体的国家清单时，还应采用气专委良好做法指导意见，以便提高透明度、一致性、可比性、完整性和准确性。

10. 根据气专委的指南，附件一缔约方可采用上述指南中列出的不同方法(层级)，对按气专委良好做法指导意见决策构架中可产生较准确估计数的方法给予优先考虑。按照气专委指南，附件一缔约方也可使用其认为能更好地反映本国情况的本国方法，但这些方法应符合气专委指南和气专委的良好做法指导意见，并应保存完好的文件记录和具备科学依据。

11. 对于按照气专委良好做法指导意见确定为关键类别并按照以下第 13 段规定估算的类别，[4] 附件一缔约方应尽一切努力按照气专委良好做法指导意见中的相应决策构架采用建议的方法。附件一缔约方还应尽一切努力研订和/或选择排放系数，并按照气专委良好做法指导意见收集和选择活动数据。

12. 对于大多数类别，气专委指南提出了一套预先设定的(默认)方法，它包括设定的排放系数，在有些情况下还包括设定的活动数据的参考出处。此外，气专委良好做法指导意见为某些源和气体提出了更新的默认排放系数和默认活动数据。由于这些默认数据、系数和方法所隐含的假设可能并不适合具体国家的情况，因此附件一缔约方在可能的情况下最好采用本国的排放系数和活动数据。然而，这些系数和数据的制定方法必须符合气专委良好做法指导意见，而且应认为更加准确，报告也应透明。如果附件一缔约方因缺少具体国别信息而选用缺省系数或数据，在可能的情况下均应使用气专委良好做法指导意见中所提供的更新的默认活动数据或排放系数。

关键类别的确定

13. 附件一缔约方应按照气专委良好做法指导意见中的规定，采用第一级或第二级分析方法和趋势评估办法，确定其基年的国家关键类别及最近提交报告的清单年。

不确定性

14. 附件一缔约方应按照气专委良好做法指导意见的规定，至少使用第一级方法对所有源和汇类别所用数据的不确定性作出量化估算。或者，缔约方也可以采用气专委良好做法指导意见中的第二级方法，以避免第一级方法在技术上的局限性。还应在国家清单报告中从质的方面以透明的方式叙述所有源和汇类别所用数据的不确定性，尤其是对于被定为关键类别的各个类别。

[4] “类别”一词是指源类别和汇类别。“关键类别”一词是指气专委《国家温室气体清单方面良好做法指导意见和不确定性的掌握》中所述的源类别和气专委《关于土地利用、土地利用的变化和林业的良好做法指导意见》中所述的关键类别。

重新计算

15. 一个完整时间序列的清单，包括提出清单报告的基年和之后各年，应采用同样的方法作出估算，并且应当以一种前后一致的方式获取和使用基本活动数据和排放系数。重新计算应确保时间序列的一致性，重新计算的唯一目的在于提高准确性和/或完整性。凡收集基本活动数据和排放系数的方法或方式发生变化时，附件一缔约方应对基年和之后各年的清单重新作出计算。附件一缔约方应对照气专委良好做法指导意见中提供的理由，尤其是有关关键类别的理由，对是否需要重新计算作出评估。进行重新计算应依照气专委良好做法指导意见和本《气候公约》指南所列一般原则。

16. 在有些情况下，由于可能缺乏直接用于包括基年在内的某些历史年份排放量估计数计算中的活动数据、排放系数或其他参数，可能无法就所有年份使用相同的方法和一致的数据集。遇有这种情况，可能需要使用第 9 至第 12 段一般未涵盖的替代方法重新计算排放量或清除量。在这类情况下，附件一缔约方应使用气专委良好做法指导意见中提供的办法之一(如：重叠法、替代法、内插法和外推法)确定缺失的数值。在使用这类办法的情况下，附件一缔约方应加以记录并在国家清单报告中证明时间序列是一致的。

质量保证/质量控制

17. 每个附件一缔约方应按照依据气专委良好做法指导意见确定的质量保证/质量控制计划，详细拟订一项清单质量保证/质量控制计划并执行总的清单质量控制程序(第一级) [5]。此外，对于关键类别和发生重大方法变更和/或数据修改的个别类别，附件一缔约方应按照气专委良好做法指导意见，应用类别特定的质量控制程序(第二级)。第二级质量控制与评估数据源不确定性结合进行可能效率更高。另外，附件一缔约方应按照气专委良好做法指导意见通过对清单的专家平级基本审评实施质量保证程序。

F. 报　告

1. 一般指导意见

排放量和清除量估计数

18. 《公约》第十二条第 1 款(a)项要求每一缔约方除其他外，通过秘书处向缔约方会议提交一份关于《蒙特利尔议定书》未予管制的所有温室气体各种源的人为排放量和各种汇的清除量的国家清单。作为一项起码要求，清单应至少包含以下六种温室气体的信息：二氧化碳(CO_2)、甲烷(CH_4)、一氧化二氮(N_2O)、全氟碳化物(PFCs)、氢氟碳化物(HFCs)和六氟化硫

[5] 见《国家温室气体清单方面良好做法指导意见和不确定性的掌握》表 8.1 中的概要。

(SF_6)。对已由气专委确定其百年全球升温潜能值(GWP)并经缔约方会议通过的所有其他温室气体，附件一缔约方应提出人为排放量和清除量的报告。附件一缔约方还应提供下列间接温室气体的信息：一氧化碳(CO)、氧化氮(NO_x)和非甲烷挥发性有机化合物(NMVOCs)，以及氟化硫(SO_x)。

19. 温室气体排放量和清除量应按质量单位逐项气体分别提出，源排放量应与汇清除量分别列出，土地利用、土地利用的变化和林业等领域关于源和汇的信息在技术上无法区分的情况除外。对于氢氟碳化物和全氟碳化物，除非在适用以下第 27 段的情况下，否则应以分列方式就这一类中的每一有关化学物质分别提出排放量报告。

20. 此外，按照第 2/CP.3 号决定，附件一缔约方应在简要清单中按 CO_2 当量 [6] 报告温室气体的合计排放量和清除量，报告时使用气专委在第二次评估报告中根据 100 年时间范围内温室气体变化的影响提出的全球升温潜能值(以下称为 1995 年气专委全球升温潜能值)。这些数值列在本指南末尾的表 1 中。一旦缔约方会议通过全球升温潜能值，将对第 15 页表 1 加以修正，列入新的温室气体及其百年全球升温潜能值。

21. 按照第 2/CP.3 号决定，如有数据，附件一缔约方应报告 HFCs、PFCs 和 SF_6 的实际排放量，按照化学品(如 $HFC\text{-}134_a$)和源类别以质量单位和 CO_2 当量提供分项数据。附件一缔约方应尽最大努力为报告实际排放量开发必要的数据来源。有些源类别符合潜在排放的概念，附件一缔约方尚无计算实际排放量的必要数据，对此附件一缔约方应报告分项潜在排放量。为了透明和可加以比较，报告实际排放量的附件一缔约方对于符合潜在排放量概念的排放源也应报告潜在排放量。

22. 任何同时也是《京都议定书》缔约方的附件一缔约方，凡按照《京都议定书》第三条第 8 款选定将 1995 年用作根据《京都议定书》第三条第 7 款和第 8 款计算 HFCs、PFCs 和 SF_6 分配数量的基年的，均应在国家清单报告和通用报告格式相关表格的文件资料框中予以注明。不论为《京都议定书》目的选定哪一年为这些气体的基年，凡是清单数据，这类附件一缔约方都应按照本指南的规定报告 1990 年以来这些气体的排放量估计数和趋向。

23. 大力提倡附件一缔约方报告已算出百年升温潜能值但未经缔约方会议予以通过的其他温室气体的排放量和清除量。这类排放量和清除量应与国家的总量分开报告。应注明全球升温潜能值和参考出处。

24. 根据气专委的指南，国际航空和船用仓载燃料的排放量不应列入国家总量，而应单独报告。附件一缔约方应尽最大努力，按照气专委的良好做法指导意见，采用并报告对国内排放量和国际排放量加以区别的方法。附件一缔约方还应在其清单中作为两个单独的条目报告国际航空和船用仓载燃料的排放量。

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[6] 应按照类似于通用报告格式简表 1.A 中同一类别分计方式提供 CO_2 当量的排放量。

25. 附件一缔约方应按照气专委良好做法指导意见在能源或工业加工部门注明清单中如何计入原料以及燃料的非能源使用。

26. 如果附件一缔约方在清单中计入废气的 CO_2 捕获和随后 CO_2 储存的效应，应注明计入此类效应的类别，并就所用方法及由此而形成的效应提供透明的文件材料。

27. 排放量和清除量应按照每种源/汇类别尽可能细分，同时考虑到为保护商业机密和军事情报而可能需要某种最低限度的合计。

完整性

28. 凡清单中出现方法或数据差缺之处，应以透明方式对这些差缺加以说明。附件一缔约方应明确指出其清单中未与考虑但气专委指南已列入的源和汇并说明没有列入的理由。同样，附件一缔约方应指出清单未涵盖的任何地理区域，并说明未予涵盖的理由。此外，附件一缔约方在填写通用报告格式所有表格的单元格时应使用下列标准标记符号[7]。这样做便于对清单的完整性做出评估。

标准标记符号如下：

(a) “NO”(未发生)，指在一个国家某一源或汇类别中的活动或过程没有发生；

(b) “NE”(未估算)指对温室气体现有源排放量和汇清除量没有做出估算。如果在一份关于 CO_2、N_2O、CH_4、HFCs、PFCs 和 SF_6 的排放量或清除量清单中填写“NE”，附件一缔约方应在国家清单报告和通用报告格式完整性表格中说明未估算排放量或清除量的理由；[8]

(c) “NA”(不适用)，指某一源/汇类别中的活动没有产生特定气体的排放或清除。如果通用报告格式中适用填写“NA”是灰色阴影，则不必填写；

(d) “IE”(另列)，指对温室气体的源排放量和汇清除量已作出估算，但列在清单中的别处，而未归入预期应填的源/汇类别。在清单中填写“IE”时，附件一缔约方应使用通用报告格式中的完整性表格，指明未列于此处的源/汇类别的排放量或清除量列在清单何处，而且附件一缔约方应当解释从预期应填类别中移去的理由；

(e) “C”(机密)，指温室气体的源排放量和汇清除量可能导致机密情报的泄露，以上第 27 段对此作出了规定。

29. 如果附件一缔约方估算并报告了未列入气专委指南中的国家特有源或汇或气体的排放量和清除量，应明确说明它们属于哪种源/汇类别或气体，以及在对它们作出估算时采用了哪些方法，排放系数和活动数据，并提供这些数据的参考出处。

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[7] 如国家清单报告中使用这类标记符号，应与通用报告格式中填报的保持一致。

[8] 即便排放量被认为微不足道，如已计算，则缔约方仍应加以报告，否则应使用编写字“NE”。

关键类别

30. 附件一缔约方应在排放水平和排放趋势两方面估算和报告关键类别排放量在其国家总计各自和累计所占的比例。应采用气专委良好做法指导意见中规定的方法以 CO_2 当量表示排放量。如以下第 41 和 47 段所示，这一信息应列入通用报告格式表 7 以及国家清单报告，为此应使用气专委《国家温室气体清单方面良好做法指导意见和不确定性的掌握》中的表 7.1 和表 7.3 和《关于土地利用、土地利用的变化和林业的良好做法指导意见》中的表 5.4.1 至表 5.4.3,它们适合于附件一缔约方用于确定关键类别的类别划分。[9]

核　实

31. 根据气专委指南以及为了核实目的，附件一缔约方应对其燃料燃烧产生的二氧化碳排放量的国家估计数与采用气专委参比办法得出的估计数加以比较，并在通用报告格式和年度清单中加以报告比较的结果。还鼓励附件一缔约方报告其国内对清单的同级审评。

不确定性

32. 附件一缔约方应在国家清单报告中报告以上第 14 段所指估算的不确定性以及所采用的方法和依据的假设，其目的在于确定优先顺序，提高今后国家清单的准确性并指导选择方法的决定。提供这一信息应使用气专委《国家温室气体清单方面良好做法指导意见和不确定性的掌握》表 6.1 和表 6.2, 再加上《关于土地利用、土地利用的变化和林业的良好做法指导意见》第 5.2.5 节所列的土地利用、土地利用变化和林业的有关类别。在这些表中，“国家总计”一词指源的排放量绝对值减去汇的清除量。此外，附件一缔约方应在这些表格中注明清单中定为关键类别的各个类别。如果估算不确定性水平所采用的方法不同于气专委良好做法指导意见，应当对这类方法加以说明。

重新计算

33. 如果由于方法的改变排放系数和活动数据获取和使用的方式的改变、或增加自基年以来就存在但以前未报告的新的源和汇等原因重新计算了以前提交的排放量和清除量的估计数，应报告这种重新计算，报告应涵盖基年和其后各年，直至作出重新计算的年份为止。

34. 应在国家清单报告和在有关的通用报告格式表格中报告经重新计算的数据，并在国家清单报告中附带解释性资料。如果附件一缔约方对估计数未做重新计算而气专委良好做法指导意见规定应做重新计算，则还应做出解释。应报告重新计算时采用的程序、计算方法的

[9] 《国家温室气体清单方面良好做法指导意见和不确定性的掌握》中的表 7.1 和气专委《关于土地利用、土地利用的变化和林业的良好做法指导意见》中的表 5.4.1, 应成为准备关键类别分析的基础，但不需要在国家清单报告中报告。

变化、使用的排放系数和活动数据以及列入的原先未涵盖的源或汇，并注明发生上述变化的源或汇类别的有关变化。对于关键类别，附件一缔约方应按照以下第 41 段的规定将这一信息列入国家清单报告。

35. 附件一缔约方应按照以下第 47 段的说明和本指南附件二的概要解释，使用相应的通用报告格式表报告排放量和清除量估计数中的任何其它变化，不论其幅度如何，并明确说明与以前提交的清单比较作出改变的理由，例如，更正错误、统计或编辑方面的修改或类别的重新编排。

质量保证/质量控制

36. 附件一缔约方应在国家清单报告中报告其质量保证/质量控制计划，并提供已经执行或未来将要执行的质量保证/质量控制程序方面的信息。

调 整 [10]

37. 报告清单时不报告气候变异或电力贸易方式等方面的调整。如果附件一缔约方另外对清单数据做出这种调整，它们应以透明方式另行报告，并清楚地说明采用的方法。

2. 国家清单报告

38. 附件一缔约方应通过秘书处向缔约方会议提交国家清单报告，该报告载有关于国家清单的详细、完整的信息。国家清单报告应保证具有透明度并载有充分详细的信息以便能够对清单做出审评。这种信息应包含从基年 [11] 至最近的清单年的整个时间序列和对以往提交的清单做出的任何更改。

39. 应按照缔约方会议的有关决定，每年通过秘书处以电子方式向缔约方会议提交完整的最新国家清单报告；如附件一缔约方发行国家清单报告的硬拷贝，也希望它们将其交给秘书处。

40. 国家清单报告应包括按照以上第 38 段提交的年度清单信息。

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[10] 这里所指的调整涉及气候变异或电力贸易的方式等。它们并非指《京都议定书》第五条第 2 款下的调整。

[11] 按照《公约》第四条第 6 款及第 9/CP.2 号和第 11/CP.4 号决定的规定，允许某些经济转型缔约方如以上第 8 段所提到的那样，采用 1990 年以外的年份作为基年。

41. 国家清单报告应包括以下内容：

(a) 具体方法、假设、排放系数和活动数据的说明、参考出处和资料来源，并说明予以选定的理由。此外，还应包括指明采用方法的复杂程度(气专委规定的层级)和说明附件一缔约方使用的任何本国方法，以及预测未来改进方面的信息。对于关键类别，如果未采用气专委良好做法指导意见中恰当的决策构架所建议的方法，则应加以解释。此外，应按照气专委良好做法指导意见记录活动数据、排放系数和相关信息。

(b) 说明第 30 段中所指的国家关键类别，[12] 其中包括：

(一) 关于通用报告格式中的关键类别表位置的说明；

(二) 关于使用的类别划分程度及其理由方面的信息；

(三) 为查明关键的排放源而采用的方法学方面的其他信息；

(c) 关于对排放量可能存在双重计算或漏算问题，应在国家清单报告中的相应部门一节加以说明：

(一) 原料及燃料的非能源使用是否已计入清单，如果已计入，它们在能源或工业加工部门是如何计入的；

(二) 对生物质燃烧的 CO_2 是否做了估算，在通用报告格式的部门背景数据表(表 5.A-5.F, 表 5(V))中计在哪里；

(三) 清单中是否计入了与溶剂使用、采煤以及矿物燃料装卸、洗井和渗漏等非燃烧和非生物源过程的 CO、NMVOCs 及 CH_4 排放量大气氧化相对应的 CO_2 排放量；

(四) 关于未计入或可能未计入的源或汇类别的信息，包括为未来提交报告计算估计数的工作情况；

(d) 关于废气 CO_2 捕获及随后 CO_2 储存的效应如何计入清单的说明；

(e) 以上第 32 段要求的关于不确定性的资料；

(f) 以上第 33 至第 35 段要求的关于对以往提交的清单数据加以重新计算的信息，包括方法学、信息来源和假设的变化，以及审评之后按要求进行的重新计算；

(g) 关于与重新计算无关的、与往年相比的变化，包括方法学、信息来源和假设的变化，以及审评之后的变化；

(h) 以上第 36 段要求的质量保证/质量控制方面的信息，其中说明内部掌握的关于整个清单及单个类别、尤其是关键类别的质量保证/质量控制计划和质量保证/

[12] 秘书处还将基于气专委良好做法指导意见中的表 7.1 对所有缔约方做出一种标准的关键源判定。如果它与缔约方编制清单的方法相符合，也可以采用这种方法。

质量控制活动，以及由外部做出的审评。应说明输入数据的质量、方法、处理和存档方面的关键调查结果和它们是如何处理的；

(i) 说明编写清单的体制安排。

42. 如果以上第 41 段(a)至(h)分段要求的信息已详细列入通用报告格式中，附件一缔约方应在国家清单报告中指明通用报告格式中的何处提供了这一信息。

43. 应按照本指南附件一所列的内容概要报告国家清单报告，确保以上第 41 段要求的信息全部列入。

3. 通用报告格式

44. 通用报告格式的设计目的在于确保附件一缔约方以一种标准化的格式报告量化数据并便于在附件一缔约方之间比较清单数据和趋势。主要应在国家清单报告中而不是通用报告格式表格中对非量性信息做出解释。这种解释信息应对应注明国家清单报告的具体章节。

45. 附件一缔约方应通过秘书处，每年向缔约方会议提交本指南附件二所载的通用报告格式要求提交的信息。应按照缔约方会议有关决定通过秘书处每年以电子方式完整地提交这些信息。

46. 通用报告格式是报告温室气体排放量和清除量估计数和其他有关信息的标准化格式。采用通用报告格式，可改进对电子提交内容的管理，便于对清单信息的处理和编制有用的技术分析和综合文件。

47. 通用报告格式由以下部分组成：

(a) 所有温室气体排放量和清除量的简表、部门表和趋势表；

(b) 用于报告隐含排放系数[13]和活动数据的部门背景数据表，其中包括：

(一) 气专委工作单 1-1, 其中载有采用气专委参比办法对燃料燃烧产生的 CO_2 排放量的估计数，还载有一份表格，用以对采用这一参比办法得出的估计数与部门办法之下的估计数加以比较，并对任何明显的差别作出解释；[14]

(二) 报告非能源原料、国际仓载燃料和多边作业的矿物燃料燃烧的表格；

(c) 主要报告关键类别、重新计算和清单完整性的表格。

48. 对通用报告格式应按照本指南附件二所列的表格加以报告，确保列入以上第 47 段中所有要求的全部信息。在填写上述表格时附件一缔约方应：

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[13] 部门背景数据表格的设计，为的是对隐含排放系数作出计算。它们是表中所列合计附件一缔约方排放量估计数和活动数据之间自上而下的比率。隐含排放系数完全是为了用于比较数据。它们并不一定是在最初排放量估计数中实际使用的排放系数，除非是一种基于计算隐含排放系数所用相同合计活动数据的简单乘法运算。

[14] 详细解释应列入国家清单报告。

(a) 就最近清单年份和对任何部门有任何更改的年份提供完整的通用报告格式。对于没有更改的年份，无须重新提交完整的通用报告格式，但在提交清单时应提到最初报告的数据没有变化。附件一缔约方应确保每年提供基年以来整个时间所列的全套、符合此种序列的通用报告格式表格；

(b) 仅在一次提交中提供包含完整时间序列的清单年通用报告格式趋势表，即在上一清单年的通用报告格式中提供；

(c) 如果信息适用于所有年份，应只在一次提交中提供完整性表格。如果上述表格中的信息与每一报告年不同，则必须在每一年的通用报告格式中或者提供表格，或者提供关于具体变化的信息；

(d) 使用部门报告和背景数据表格下端的文件资料框提供由国家清单报告做出详细解释之处的参考出处或由这些框具体说明的任何其他信息。

49. 附件一缔约方应在补充资料框中提供所要求的信息。凡由于附件一缔约方采用的方法学等级而使所要求的信息显得不适用时，应使用标记符号“NA”填写相应的单元格。遇有这种情况，附件一缔约方应在文件资料框中注明可在国家清单报告中找到对应内容的相关章节之处。

50. 附件一缔约方应在清单的所有表格中使用以上第 28 段中规定的标记符号，填写未直接填报量性数据的单元格。以这种方式使用标记符号便于对清单的完整性做出评估。关于在通用报告格式表格中不要求量化信息之处使用标记符号的情况，对于如何在每一张表中使用标记符号做出了具体的指导。

G. 存　档

51. 附件一缔约方应收集并保存每一年的所有相关的清单信息，其中包括所有分列的排放系数、活动数据及说明这些系数和数据是如何算出的文件资料，包括可能会有的专家判断，以及如何加以合计并在清单中报告的方式。这种信息可使专家审评小组能够重新推导出清单。应从基年开始对清单信息加以存档，并应包括重新计算所采用的相应数据。“文件线索”可包括用于汇集清单数据的电子数据表或数据库，应使排放量和清除量估计数能够追溯到最初的分列排放系数和活动数据。另外，与质量保证/质量控制工作、不确定性评估或关键类别分析相关的佐证文件也应存档。这种信息还有助于秘书处在编制年度清单汇编或对方法问题做评估时及时对清单数据做出澄清。鼓励附件一缔约方由一个单一的国家清单设施收集和搜集信息，或至少将设施数目减少到最低程度。

H. 指南的系统更新

52. 应按照缔约方会议的相关决定，审查和修订本项《气候公约》报告指南。

I. 语　文

53. 国家清单报告应以联合国的一种正式语文提交。另外，还鼓励附件一缔约方视情况提交国家清单报告的英文译本。

表 1. 1995 年气专委根据 100 年时间内温室气体效应计算的全球升温潜能值 [a/]

温室气体	化学分子式	1995 年气专委全球升温潜能值
二氧化碳	CO_2	1
甲烷	CH_4	21
一氧化二氮	N_2O	310
氢氟碳化合物 (HFCs)		
HFC-23	CHF_3	11,700
HFC-32	CH_2F_2	650
HFC-41	CH_3F	150
HFC-43-10mee	$C_5H_2F_{10}$	1,300
HFC-125	C_2HF_5	2,800
HFC-134	$C_2H_2F_4(CHF_2CHF)$	1,000
HFC-134a	$C_2H_2F_4(CH_2FCF_3)$	1,300
HFC-152a	$C_2H_4F_2(CH_3CHF_2)$	140
HFC-143	$C_2H_3F_3(CHF_2CH_2)$	300
HFC-143a	$C_2H_3F_3(CF_3CH_3)$	3,800
HFC-227ea	C_3HF_7	2,900
HFC-236fa	$C_3H_2F_6$	6,300
HFC-245ca	$C_3H_3F_5$	560
全氟化碳		
全氟化甲烷	CF_4	6,500
全氟乙烷	C_2F_6	9,200
全氟丙烷	C_3F_8	7,000
全氟丁烷	C_4F_{10}	7,000
全氟环丁烷	$c\text{-}C_4F_8$	8,700
全氟戊烷	C_5F_{12}	7,500
全氟己烷	C_6F_{14}	7,400
六氟化硫		
六氟化硫	SF_6	23,900

a/　按照气专委第二份评估报告中的规定。

附 件 一

国家清单报告结构

内容提要

内容提要 1. 关于温室气体和气候变化的背景信息(如：联系国情向公众通报情况)
内容提要 2. 与趋势有关的国家排放量和清除量概要
内容提要 3. 源和汇类别排放量估计数和趋势概览
内容提要 4. 其他信息(如：间接温室气体)

第 1 章：导 言

1.1 关于温室气体清单和气候变化的背景信息(如：联系国情向公众通报情况)
1.2 关于编制清单的体制安排的说明
1.3 关于编制清单的程序(数据收集、数据处理、数据储存)的简要介绍
1.4 关于所用方法和数据来源的简要概括介绍
1.5 关于关键类别的简要介绍
1.6 关于质量保证/质量控制计划的信息，相关之处包括机密问题的核实和处理
1.7 总的不确定性评估，其中包括清单总计数整体不确定性的数据
1.8 关于完整性的总体评估(参考国家清单报告结构附件 5)

第 2 章：温室气体排放量趋势

本章提供的信息概述排放趋势，但无需重复在各部门章节和通用报告格式趋势表格中提供的信息。

2.1 关于温室气体合计排放趋势的说明和解释
2.2 关于每种气体排放趋势的说明和解释
2.3 关于每一类别排放趋势的说明和解释
2.4 关于间接温室气体和 SO_2 排放趋势的说明和解释

第 3-9 章：(例如：部门名称(通用报告格式部门编号))

下列各个部门章节应遵循以下结构。应按照气专委规定的部门报告信息。

3.1. 部门概览(如：数量概览和说明)
3.2. 源类别(通用报告格式源类别编号)

对于气专委所定的每一种源类别(即，通用报告格式简表 1.A, 或说明了气专委方法的层次，或附件一缔约方估算了温室气体排放量的层次)，应提供下列信息:

3.2.1. 关于源类别的说明(如：源的特性)

3.2.2. 方法学问题(如：方法/活动数据/排放系数、假设、参数以及排放量和清除量估计数所依据的标示方式的选择－选定这些要素的理由、任何具体的方法学问题(如：关于本国方法的说明))

3.2.3. 不确定性与时间序列的一致性

3.2.4. 特定源的质量保证/质量控制和核查(适用情况下)

3.2.5. 特定源的重新计算(适用情况下)，包括审评之后相应做的改变

3.2.6. 特定源的计划的改进(适用情况下)(如：方法学、活动数据、排放系数等等)，包括审评之后相应做的改进

如果使用了同样的方法、活动数据和/或排放系数，附件一缔约方可以按合计的形式报告以上要求的某些/一些源类别的某些信息，以便信息重复。对于关键类别，信息应详细，以便能够对清单作透彻的审评。

第 3 章：能源(通用报告格式部门 1)

此外，能源方面的信息应包括下列各项:

燃料燃烧(通用报告格式部门 1A)，包括下列详细信息：

- 部门办法与参比办法的比较
- 国际舱载燃料
- 原料和燃料的非能源使用
- 废气的 CO_2 捕获及随后的 CO_2 储存
- 特定国家的问题

国际燃料以及石油和天然气的散逸性排放(通用报告格式 1B)

第 4 章：工业加工(通用报告格式部门 2)

第 5 章：溶剂和其他产品使用(通用报告格式部门 3)

第 6 章：农业(通用报告格式部门 4)

第 7 章：土地利用、土地利用的变化和林业(通用报告格式部门 5)

此外，土地利用、土地利用的变化和林业的信息应该包括以下方面:

- 计算土地面积所使用的办法和编制清单所使用的土地利用数据库的信息;
- 所使用的土地利用定义和分类制度及其与土地利用、土地利用变化和林业类别的对应关系。

第 8 章：废弃物(通用报告格式部门 6)

第 9 章：其他(通用报告格式部门 7)(适用情况下)

此外，原先在试验阶段所用通用报告格式(FCCC/CP/1999/7)补充信息框和文件材料框中提供的信息，应按照本拟议结构附录的规定在相关之处纳入国家清单报告并予以补充。

第 10 章：重新计算和改进

在本章中提供的信息应有助于概览清单的重新计算和改进，但无需重复在部门章节中提供的信息，特别是应提供的特定类别的信息，尤其是，附件一缔约方应注明部门章节中所提供信息的所在位置。

10.1. 关于重新计算的解释和理由

10.2. 对于排放水平的影响

10.3. 对于排放趋势的影响，包括时间序列的一致性

10.4. 重新计算，包括审评之后的相应重新计算，以及计划对清单作的改进(例如：体制安排、清单编制)

参考材料

国家清单报告附件

附件 1：关键类别

- 关于用于确定关键类别的方法的说明
- 注明关键类别表在通用报告格式中的位置
- 关于分划层次的说明
- 气专委良好做法指导意见表 7.A1-7.A3 [1]

附件 2：关于估算矿物燃料燃烧 CO_2 排放量所用方法和数据的详细叙述

附件 3：关于个别源类别或汇类别(相关情况下)的与方法学有关的其他详细叙述

附件 4：CO_2 参比办法和与部门办法的比较，以及关于国家能源平衡的有关信息

附件 5：关于完整性和未列入的温室气体(潜在)源和汇排放量的评估

附件 6：作为国家清单报告提交材料(相关情况下)一部分加以考虑的补充信息或其他有用的参考信息

附件 7：气专委良好做法指导意见表 6.1 和 6.2 [2]

附件 8：其他附件－(其他有关信息－备选)

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[1] 增加此项，以便与本指南第 30 段的规定保持一致。

[2] 增加此项，以便与本指南第 32 段和第 41(f)段的规定保持一致。

附　录

关于列入国家清单报告相应章节的部门报告的额外要求

本附录就附件一缔约方可在国家清单报告中为便利审评清单而提供的额外信息提出指导意见。这不是一份详尽无遗的清单。根据附件一缔约方本国在估算温室气体排放量和清除量方面的办法，额外信息也可在国家信息通报中提供。

能　源

燃料燃烧

可提供比通用报告格式表 1.A(a)中的要求更具体的信息，例如：

- (本单位内)自己发电；
- 城市供暖(制造业、商业和住宅部门)。

散逸性燃料的排放

煤矿：

可提供比通用报告格式表 1.B.1 的要求更具体的信息，例如：

- 开采中的地下煤矿数量
- 有排水(回收)系统的煤矿数量

石油和天然气

可提供比通用报告格式表 1.B.2 的要求更具体的信息，例如：

- 管道长度
- 油井的数量
- 气井的数量
- 天然气生产量 [1]
- 石油生产量 [1]

工业加工

金属生产

可提供比通用报告格式表 2(I).A-G 的要求更具体的信息，例如：原钢和再生钢生产的数据。

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[1] 在天然气和石油生产中，生产量是总产量的一种量度，例如石油的每日桶数或天然气的年立方米数。具体说明报告值的单位。须考虑这些值应与通用报告格式表 1.B.2 生产一栏下所报告的活动数据相一致。

卤化碳和 SF_6 的潜在排放

通用报告格式表 2(II)s2 中报告“生产”是指新的化学品的生产。再生物质可列入该表，但应保障避免对排放量作双重计算。应在国家清单报告中做有关解释。

金属生产/卤化碳和 SF_6 生产中的 PFC_s 和 SF_6

所用活动数据类型将在通用报告格式表 2(II).C-E(“说明”栏)中具体写明。凡采用 1b 级(用于 2.C 金属生产)、2 级(2.E 卤化碳和 SF_6 的生产)和本国所定具体方法时，应具体说明使用的任何其他有关的活动数据。

HFCs、PFCs 和 SF_6 的消耗

关于通用报告格式表 2(II).F (“停止使用时产品中的残留液量”)中报告的活动数据，附件一缔约方应在国家清单报告中提供关于回收化学品数量(回收率)和排放量估算中所使用的其他有关的信息。

通用报告格式表 2(II).F 中应填报的是，在采用“自下而上办法”(基于设备总量和这类设备估算的排放率)的情况下，用于计算卤化碳和 SF_6 消耗过程实际排放量的活动数据和排放系数。某些附件一缔约方可能采用与以上不同的“自上而下办法”(基于设备和/或气体的年销售量)估算其实际排放量。这些附件一缔约方应在国家清单报告中提供通用报告格式表格中所用的活动数据并提供任何其他有关的信息。这些附件一缔约方应提供的数据包括：

- 填充新产品所使用的液量
- 现有产品保养所用的液量
- 填充退役产品最初使用的液量(退役产品名牌标定总容量)
- 产品寿命
- 如果以用于计算填充退役产品原使用的液量，则还应包括产品销售量的增长率。

或者，附件一缔约方也可选用提供同等信息的其他格式

溶剂和其他产品的使用

气专委指南并未提供溶剂和其他产品使用所产生的 N_2O 排放量的计算方法。如果在同样报告格式中报告此种数据，缔约方应在国家清单报告中提供用以作出这类估算的补充信息(活动数据和排放系数)。

农 业

跨部门

附件一缔约方应在通用报告格式表 4.A 中提供牲畜存栏数详细数据。相关情况下，任何按地区和牲畜种类(按照气专委良好做法指导意见建议的分类方法)所作的进一步划分可在国家清单报告中提供。应在相关的通用报告格式表格中使用前后一致的牲畜存栏数统计数据估算肠内发酵产生的 CH_4 排放量、粪肥管理产生的 CH_4 和 N_2O 排放量、由土壤的 N_2O 排放量

和与粪肥生产及使用相关的 N_2O 的排放量，以及将畜粪用作燃料产生的排放量和废弃物部门报告的污水有关的排放量。

肠内发酵

可提供比通用报告格式表 4.A 要求的更具体的信息，例如：与应用良好做法指导意见有关的参数。

粪肥管理

可提供比通用报告格式表 4.B(a)和 4.B(b)的要求更具体的信息，例如：与应用良好做法指导意见有关的参数。补充信息表所要求的信息可能无法直接用于为甲烷校正值计算所开发的具有国别针对性的方法。如果无法在补充信息框内提供有关的数据，应在国家清单报告中说明校正值是如何得出的。

水稻种植

可提供比通用报告格式表 4.C 的要求更具体的信息，例如：如果按一国多个地区和/或按生长季节分计，应在国家清单报告中提供关于分计和有关数据的补充信息。在有条件的情况下，在国家清单报告中提供按土壤类型和水稻种植品种的活动数据和衡量系数。

农业土壤

可提供比通用报告格式表 4.D 的要求更具体的信息，例如：

- 气专委指南并未提供计算农业土壤中 CH_4 的排放量或清除量的方法。如果报告这类数据，附件一缔约方应在国家清单报告中提供用以作这类估算的补充信息(活动数据和排放系数)；
- 除了应在国家清单报告中提供表 4.D 补充信息框中要求的数据外，还应在 $Frac_{GRAZ}$ (放牧)一栏中按照牲畜种类提供分计值和在 $Frac_{BURN}$(燃烧部分)一栏中按照作物类型提供分计值。

稀树草原的限定烧荒和农业残余物的田间焚烧

可提供比通用报告格式表 4.E 和 4.F 的要求更具体的信息，例如：气专委指南并未提供稀树草原烧荒或农业残余物田间焚烧所产生的 CO_2 排放量的计算方法。如果报告此种数据，附件一缔约方应在国家清单报告中提供用以做这类估算的补充信息(活动数据和排放系数)。

土地利用、土地利用的变化和林业

可提供比通用报告格式的要求更具体的每种土地利用类别和分类别的信息，例如：

- 在按分类别提供估计数时，国家报告清单中关于分类和相关数据的额外信息；
- 分别报告生物质燃烧包括野火和控制性燃烧的 CO_2 排放量；
- 对选择报告收获的林木产品的缔约方而言，关于收获的林木产品的 CO_2 排放量和清除量的信息，包括各产品类别和处理的信息；

- 关于如何避免农业与土地利用、土地利用变化和林业部门之间的重复计算和遗漏的信息。

废弃物

固体废弃物的处理和废弃物焚烧

可提供比通用报告格式表 6.A 和 6.C 的要求更具体的信息，例如：

- 如果未列入通用报告格式的补充信息框内，应在国家清单报告中提供用以计算的所有有关资料
- 土地填埋所用废弃物的构成(%)应分为：纸和纸板、食物垃圾和庭院垃圾、塑料、玻璃、纺织品、其它(按照惰性或有机废弃物分别具体说明)
- 废弃物的回收部分
- 废弃物的焚烧部分
- 可回收 CH4 的固体废弃物处理厂数目。

废水处理

可提供比通用报告格式表 6.B 的要求更具体的信息，例如：关于在通用报告格式表格 6.B 中报告的废水处理产生的 N_2O 数据，采用其它方法估算人类排泄物或废水处理产生的 N_2O 排放量的附件一缔约方，应在国家清单报告中提供关于使用的方法、活动数据和排放系数的相应信息。

附 件 二

通用报告格式

关于通用报告格式的说明

1. 通用报告格式是提交的国家清单材料的组成部分。设计这个格式，是为了确保附件一缔约方以标准格式报告定量数据，并便利比较附件一缔约方的清单数据。与任何非定量信息有关的细节应在国家清单报告中提供。

2. 通用报告格式中提供的信息目的在于提高清单的可比性和透明度，其途径除其他外包括便利对照比较附件一缔约方的活动数据和隐含排放系数或碳储存量变化系数，并易于找出清单中可能存在的差错、误解和缺漏。

3. 如本报告指南所述，通用报告格式包括从修订的 1996 年气专委国家温室气体清单指南(修订的 1996 年气专委指南)中摘出的概要报告和部门报告表格，加上新近制定的分部门背景数据表格，以及其他符合修订的 1996 年气专委指南和气候变化专门委员会(气专委)《国家温室气体清单的良好做法指导意见和不确定性的掌握》(气专委良好做法指导意见)的表格。

4. 有些部门背景表格要求计算隐含排放系数或碳储存量变化系数。这些是附件一缔约方排放量估计数和总计活动数据二者之间自上而下的比率。隐含排放系数或碳储存量变化系数仅仅用于比较。它们不一定是原始排放估计中实际使用的排放系数或清除系数，除非这只是用于计算隐含排放系数或碳储存量变化系数时以同样的总计活动数据为基础的简单乘法运算。

5. 与修订的 1996 年气专委指南相一致，备忘项，如来自国际海运和航空舱载燃料的排放量估计数、生物质 CO_2 排放量和多边作业排放量，应在适当的表格中填报，不列入国别的总数。

6. 在需要提供特定部门/类别的全面详细资料时，附件一缔约方应使用表格之下的文件资料框具体指明国家清单报告的有关章节。

7. 附件一缔约方应填写所有要求填报排放量或清除量估计数、活动数据或排放系数的单元格。在没有填写数据的情况下，应当使用报告指南第 28 段所述的标记符号。

8. 在类别“其他”之下的部门背景表格中，可增加一个标明具体国别类别的空行。这些类别将被自动纳入部门报告表格。

9. 附件一缔约方应在额外信息框中填入数据。如果所要求的信息因附件一缔约方所用方法学层级而不适合，应在对应的单元格中填写标记符号“NA”。

10. 表格的顺序以及栏、行和单元格名称不应改动，否则会造成数据汇编的复杂化。对源和汇类别现有划分的任何增补信息应酌情在“其他”之下提供。

11. 为了简化表格的结构和明确说明每个表格的具体报告要求，只有需要附件一缔约方填写的单元格才留空。浅灰色阴影单元格表示要用秘书处提供的软件填报。然而，选择不使用软件填报通用报告格式的附件一缔约方则需要填写这些单元格。

12. 如同目前版本的通用报告格式一样，不准备包含任何信息的单元格一律使用深灰色阴影。

13. 在土地利用、土地利用的变化和林业部门背景数据表格中，应该将碳的增减情况分别列出，但因所使用的方法而在技术不可能将增减信息分开的情况除外。

14. 各附件一缔约方应按照本报告指南第 18 段的规定，通报按《蒙特利尔议定书》未予管制的所有温室气体人为源排放量和汇清除量排列的国家温室气体清单。

15. 根据修订的 1996 年气专委指南的规定，为提供报告的目的，清除量一律采用负号(-)，排放量一律采用正号(+)。将碳储存量的净变化换算成 CO_2 时，使用 C 乘以 44/12, 并把 CO_2 净清除量的标记改为负号(-)，把 CO_2 净排放量的标记改为正号(+)。

List of tables

CONTENTS

Explanatory note:

In order to avoid changes to the layout of the complex tables of the common reporting format, the tables have not been translated. The common reporting format is a standardized format to be used by Annex I Parties for electronic reporting of estimates of greenhouse gas emissions and removals and any other relevant information. Due to technical limitations, the layout of the printed version of the CRF in this document (e.g., size of tables and fonts) cannot be standardized. The list of tables in this document follows the order of tables in the electronic version of the CRF

TABLE 1 SECTORAL REPORT FOR ENERGY

(Sheet 1 of 2)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
2. Manufacturing Industries and Construction							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Other *(as specified in table 1.A(a) sheet 2)*							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other Transportation *(as specified in table 1.A(a) sheet 3)*							

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(as specified in table 1.A(a) sheet 4)*							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining and Handling							
b. Solid Fuel Transformation							
c. Other *(as specified in table 1.B.1)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
d. Other *(as specified in table 1.B.2)*							
Memo Items: [1]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the Energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO_2 emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO_2 emissions are accounted for as a loss of biomass stocks in the Land Use, Land-Use Change and Forestry sector.

Documentation Box:
Parties should provide detailed explanations on the Energy sector in Chapter 3: Energy (CRF sector 1) 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 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 1 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A. Fuel Combustion									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
1.A.1. Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
a. Public Electricity and Heat Production									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
b. Petroleum Refining									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
c. Manufacture of Solid Fuels and Other Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									

Note: All footnotes for this table are given at the end of the table on sheet 4.

Note: For the coverage of fuel categories, refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas works, gas, coke oven gas, blast furnace gas) are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass and other fuels) in the NIR (see also documentation box at the end of sheet 4 of this table).

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 2 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.2 Manufacturing Industries and Construction									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Iron and Steel									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Non-Ferrous Metals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Chemicals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
d. Pulp, Paper and Print									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
e. Food Processing, Beverages and Tobacco									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
f. Other *(please specify)*									
[4]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 3 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.3 Transport									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Civil Aviation									
Aviation Gasoline									
Jet Kerosene									
b. Road Transportation									
Gasoline									
Diesel Oil									
Liquefied Petroleum Gases (LPG)									
Other Liquid Fuels *(please specify)*									
Gaseous Fuels									
Biomass						[3]			
Other Fuels *(please specify)*									
c. Railways									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fuels *(please specify)*									
d. Navigation									
Residual Oil (Residual Fuel Oil)									
Gas/Diesel Oil									
Gasoline									
Other Liquid Fuels *(please specify)*									
Solid Fuels									
Gaseous Fuels									
Other Fuels *(please specify)*									
e. Other Transportation *(please specify)*									
[5]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 4 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.4 Other Sectors									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Commercial/Institutional									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Residential									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Agriculture/Forestry/Fisheries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
1.A.5 Other ***(Not specified elsewhere)***[6]									
a. Stationary ***(please specify)***									
[7]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Mobile ***(please specify)***									
[8]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

[1] If activity data are calculated using net calorific values (NCV) as specified by the IPCC Guidelines, write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.
[2] Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology and emission control policy, as well as on fuel characteristics. Therefore, caution should be used when comparing the implied emission factors across countries.
[3] Although carbon dioxide emissions from biomass are reported in this table, they will not be included in the total CO_2 emissions from fuel combustion. The value for total CO_2 from biomass is recorded in Table1 sheet 2 under the Memo Items.
[4] Use this cell to list all activities covered under "f. Other".
[5] Use this cell to list all activities covered under "e. Other transportation".
[6] Include military fuel use under this category.
[7] Use this cell to list all activities covered under "1.A.5.a Other - stationary".
[8] Use this cell to list all activities covered under "1.A.5.b Other - mobile".

Documentation Box:
• Parties should provide detailed explanations on the fuel combustion sub-sector in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) 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 based on GCV, use this documentation box to provide reference to the relevant section of the NIR where the information necessary to allow the calculation of the activity data based on NCV can be found.
• If some derived gases (e.g. gas works gas, coke oven gas, blast furnace gas) are considered, use this documentation box to provide a reference to the relevant section of the NIR containing the information on the allocation of these derived gases under the above fuel categories (liquid, soild, gaseous, biomass and other fuels).

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO_2 from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor (TJ/Unit)	NCV/ GCV [1]	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO_2 emissions (Gg CO_2)
Liquid Fossil	Primary Fuels	Crude Oil																
		Orimulsion																
		Natural Gas Liquids																
	Secondary Fuels	Gasoline																
		Jet Kerosene																
		Other Kerosene																
		Shale Oil																
		Gas / Diesel Oil																
		Residual Fuel Oil																
		Liquefied Petroleum Gas (LPG)																
		Ethane																
		Naphtha																
		Bitumen																
		Lubricants																
		Petroleum Coke																
		Refinery Feedstocks																
		Other Oil																
Other Liquid Fossil																		
Liquid Fossil Totals																		
Solid Fossil	Primary Fuels	Anthracite [2]																
		Coking Coal																
		Other Bituminous Coal																
		Sub-bituminous Coal																
		Lignite																
		Oil Shale																
		Peat																
	Secondary Fuels	BKB[3] and Patent Fuel																
		Coke Oven/Gas Coke																
Other Solid Fossil																		
Solid Fossil Totals																		
Gaseous Fossil		Natural Gas (Dry)																
Other Gaseous Fossil																		
Gaseous Fossil Totals																		
Total																		
Biomass total																		
		Solid Biomass																
		Liquid Biomass																
		Gas Biomass																

[1] To convert quantities in previous columns to energy units, use net calorific values (NCV) and write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.
[2] If data for Anthracite are not available separately, include with Other Bituminous Coal.
[3] BKB: Brown coal/peat briquettes.

Documentation Box:
Parties should provide detailed explanations on the fuel combustion sub-sector, including information relating to CO_2 from the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) 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 1.A(c) SECTORAL BACKGROUND DATA FROM ENERGY
Comparison of CO_2 emissions from Fuel Combustion
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPES	REFERENCE APPROACH			SECTORAL APPROACH[1]		DIFFERENCE[2]	
	Apparent energy consumption [3] (PJ)	Apparent energy consumption (excluding non-energy use and feedstocks)[4] (PJ)	CO_2 emissions (Gg)	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (%)	CO_2 emissions (%)
Liquid Fuels (excluding international bunkers)							
Solid Fuels (excluding international bunkers)[5]							
Gaseous Fuels							
Other [5]							
***Total*[5]**							

[1] "Sectoral approach" is used to indicate the approach (if different from the Reference approach) used by the Party to estimate CO_2 emissions from fuel combustion as reported in table 1.A(a), sheets 1-4.
[2] Difference in CO_2 emissions estimated by the Reference approach (RA) and the Sectoral approach (SA) (difference = 100% x ((RA-SA)/SA)). For calculating the difference in energy consumption between the two approaches, data as reported in the column "Apparent energy consumption (excluding non-energy use and feedstocks)" are used for the Reference approach.
[3] Apparent energy consumption data shown in this column are as in table 1.A(b).
[4] For the purposes of comparing apparent energy consumption from the Reference approach with energy consumption from the Sectoral approach, Parties should, in this column, subtract from the apparent energy consumption (Reference approach) the energy content corresponding to the fuel quantities used as feedstocks and/or for non-energy purposes, in accordance with the accounting of energy use in the Sectoral approach.
[5] Emissions from biomass are not included.

Note: The Reporting Instructions of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories require that estimates of CO_2 emissions from fuel combustion, derived using a detailed Sectoral approach, be compared to those from the Reference approach (Worksheet 1-1 of the IPCC Guidelines, Volume 2, Workbook). This comparison is to assist in verifying the Sectoral data.

Documentation Box:
• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to the comparison of CO_2 emissions calculated using the Sectoral approach with those calculated using the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) 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 the CO_2 emission estimates from the two approaches differ by more than 2 per cent, Parties should briefly explain the cause of this difference in this documentation box and provide a reference to relevant section of the NIR where this difference is explained in more detail.

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks and Non-Energy Use of Fuels
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPE	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	Carbon stored in non-energy use of fuels (Gg C)
Naphtha[1]				
Lubricants				
Bitumen				
Coal Oils and Tars (from Coking Coal)				
Natural Gas[1]				
Gas/Diesel Oil[1]				
LPG [1]				
Ethane[1]				
Other *(please specify)*				

Additional information[a]

CO_2 not emitted (Gg CO_2)	Subtracted from energy sector *(specify source category)*

Total	
Total amount of C and CO_2 from feedstocks and non-energy use of fuels that is included as emitted CO_2 in the Reference approach	

[1] Enter data for those fuels that are used as feedstocks (fuel used as raw materials for manufacture of products such as plastics or fertilizers) or for other non-energy use (fuels not used as fuel or transformed into another fuel (e.g. bitumen for road construction, lubricants)).

[a] The fuel rows continue from the table to the left.

Documentation box: A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during use of the energy carriers in the industrial production (e.g. fertilizer production), or during use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions, use the above table, filling in an extra table, as shown below.

Associated CO_2 emissions (Gg)	Allocated under *(Specify source category, e.g. Waste Incineration)*

• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to feedstocks, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) 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 above table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodology, but should indicate this in this documentation box and provide a reference to the relevant section of the NIR where further explanation can be found.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Solid Fuels
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS		
				CH_4		
	Amount of fuel produced	CH_4[(1)]	CO_2	Recovery/Flaring[(2)]	Emissions[(3)]	CO_2
	(Mt)	(kg/t)		(Gg)		
1. B. 1. a. Coal Mining and Handling						
i. Underground Mines[(4)]						
Mining Activities						
Post-Mining Activities						
ii. Surface Mines[(4)]						
Mining Activities						
Post-Mining Activities						
1. B. 1. b. Solid Fuel Transformation						
1. B. 1. c. Other *(please specify)*[(5)]						

(1) The IEFs for CH_4 are estimated on the basis of gross emissions as follows: (CH_4 emissions + amounts of CH_4 flared/recovered) / activity data.
(2) Amounts of CH_4 drained (recovered), utilized or flared.
(3) Final CH_4 emissions after subtracting the amounts of CH_4 utilized or recovered.
(4) In accordance with the IPCC Guidelines, emissions from Mining Activities and Post-Mining Activities are calculated using the activity data of the amount of fuel produced for Underground Mines and Surface Mines.
(5) This category is to be used for reporting any other solid-fuel-related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this by using notation key IE and making the necessary reference in Table 9 (completeness).

Documentation box:
• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.1 Solid Fuels, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.1) 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. • Regarding data on the amount of fuel produced entered in the above table, specify in this documentation box whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production. • If entries are made for "Recovery/Flaring", indicate in this documentation box whether CH_4 is flared or recovered and provide a reference to the section in the NIR where further details on recovery/flaring can be found. • If estimates are reported under 1.B.1.b. and 1.B.1.c., use this documentation box to provide information regarding activities covered under these categories and to provide a reference to the section in the NIR where the background information can be found.
s

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Oil, Natural Gas and Other Sources
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA [1]			IMPLIED EMISSION FACTORS			EMISSIONS		
	Description [1]	Unit [1]	Value	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
				(kg/unit)[2]			(Gg)		
1. B. 2. a. Oil[3]									
I. Exploration	*(e.g. number of wells drilled)*								
ii. Production[4]	*(e.g. PJ of oil produced)*								
iii. Transport	*(e.g. PJ oil loaded in tankers)*								
iv. Refining / Storage	*(e.g. PJ oil refined)*								
v. Distribution of Oil Products	*(e.g. PJ oil refined)*								
vi. Other									
1. B. 2. b. Natural Gas									
i. Exploration									
ii. Production[4] / Processing	*(e.g. PJ gas produced)*								
iii. Transmission	*(e.g. PJ gas consumed)*								
iv. Distribution	*(e.g. PJ gas consumed)*								
v. Other Leakage	*(e.g. PJ gas consumed)*								
at industrial plants and power stations									
in residential and commercial sectors									
1. B. 2. c. Venting[5]									
i. Oil	*(e.g. PJ oil produced)*								
ii. Gas	*(e.g. PJ gas produced)*								
iii. Combined									
Flaring									
i. Oil	*(e.g. PJ gas consumption)*								
ii. Gas	*(e.g. PJ gas consumption)*								
iii. Combined									
1.B.2.d. Other *(please specify)*[6]									

[1] Specify the activity data used in the Description column (see examples). Specify the unit of the activity data in the Unit column using one of the following units: PJ, Tg, 10^6 m^3, 10^6 bbl/yr, km, number of sources (e.g. wells).
[2] The unit of the implied emission factor will depend on the unit of the activity data used, and is therefore not specified in this column.
[3] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iv, respectively.
[4] If using default emission factors, these categories will include emissions from production other than venting and flaring.
[5] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for under Venting.
[6] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:
• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.2 Oil and Natural Gas, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.2) 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.
• Regarding data on the amount of fuel produced entered in this table, specify in this documentation box whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one type of activity data is used to estimate emissions.
• Venting and Flaring: Parties using the IPCC software could report venting and flaring emissions together, indicating this in this documentation box.
• If estimates are reported under "1.B.2.d Other", use this documentation box to provide information regarding activities covered under this category and to provide a reference to the section in the NIR where background information can be found.

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	(t/TJ)			(Gg)		
Aviation Bunkers							
Jet Kerosene							
Gasoline							
Marine Bunkers							
Gasoline							
Gas/Diesel Oil							
Residual Fuel Oil							
Lubricants							
Coal							
Other *(please specify)*							
Multilateral Operations[1]							

Additional information

Fuel consumption	Distribution [a] (per cent)	
	Domestic	International
Aviation		
Marine		

[a] For calculating the allocation of fuel consumption, the sums of fuel consumption for domestic navigation and aviation (table 1.A(a)) and for international bunkers (table 1.C) are used.

[1] Parties may choose to report or not report the activity data and implied emission factors for multilateral operations consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for information purposes only.

Documentation box:
• Parties should provide detailed explanations on the fuel combustion sub-sector, including international bunker fuels, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) 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 in this documentation box a brief explanation on how the consumption of international marine and aviation bunker fuels was estimated and separated from domestic consumption, and include a reference to the section of the NIR where the explanation is provided in more detail.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
Total Industrial Processes													
A. Mineral Products													
1. Cement Production													
2. Lime Production													
3. Limestone and Dolomite Use													
4. Soda Ash Production and Use													
5. Asphalt Roofing													
6. Road Paving with Asphalt													
7. Other *(as specified in table 2(I).A-G)*													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other *(as specified in table 2(I).A-G)*													
C. Metal Production													
1. Iron and Steel Production													
2. Ferroalloys Production													
3. Aluminium Production													
4. SF_6 Used in Aluminium and Magnesium Foundries													
5. Other *(as specified in table 2(I).A-G)*													

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

(1) The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)				(Gg)					
D. Other Production													
1. Pulp and Paper													
2. Food and Drink[2]													
E. Production of Halocarbons and SF_6													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other *(as specified in table 2(II))*													
F. Consumption of Halocarbons and SF_6													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Other applications using ODS[3] substitutes													
7. Semiconductor Manufacture													
8. Electrical Equipment													
9. Other *(as specified in table 2(II)*													
G. Other *(as specified in tables 2(I).A-G and 2(II))*													

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

(1) The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).
(2) CO_2 from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO_2 emissions of non-biogenic origin should be reported.
(3) ODS: ozone-depleting substances.

Documentation box:
Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) 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 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Emissions of CO_2, CH_4 and N_2O
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description[1]	(kt)	(t/t)			(Gg)					
A. Mineral Products											
1. Cement Production	*(e.g. cement or clinker production)*										
2. Lime Production											
3. Limestone and Dolomite Use											
4. Soda Ash											
Soda Ash Production											
Soda Ash Use											
5. Asphalt Roofing											
6. Road Paving with Asphalt											
7. Other *(please specify)*											
Glass Production											
B. Chemical Industry											
1. Ammonia Production[5]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
5. Other *(please specify)*											
Carbon Black											
Ethylene											
Dichloroethylene											
Styrene											
Methanol											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions plus amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Amounts of emission recovery, oxidation, destruction or transformation.

[5] To avoid double counting, make offsetting deductions for fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then for a sequestering use of the feedstock.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Emissions of CO_2, CH_4 and N_2O
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description[1]	(kt)	(t/t)			(Gg)					
C. Metal Production											
1. Iron and Steel Production											
Steel											
Pig Iron											
Sinter											
Coke											
Other *(please specify)*											
2. Ferroalloys Production											
3. Aluminium Production											
4. SF_6 Used in Aluminium and Magnesium Foundries											
5. Other *(please specify)*											
D. Other Production											
1. Pulp and Paper											
2. Food and Drink											
G. Other *(please specify)*											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.
[2] The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.
[3] Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).
[4] Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) 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.
• In relation to metal production, more specific information (e.g. data on virgin and recycled steel production) could be provided in this documentation box, or in the NIR, together with a reference to the relevant section.
• Confidentiality: Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality, a note indicating this should be provided in this documentation box.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs[1]	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs[1]	Total PFCs	SF_6
	(t)[2]													CO_2 equivalent (Gg)		(t)[2]							CO_2 equivalent(Gg)		(t)[2]
Total Actual Emissions of Halocarbons (by chemical) and SF_6																									
C. Metal Production																									
Aluminium Production																									
SF_6 Used in Aluminium Foundries																									
SF_6 Used in Magnesium Foundries																									
E. Production of Halocarbons and SF_6																									
1. By-product Emissions																									
Production of HCFC-22																									
Other																									
2. Fugitive Emissions																									
3. Other *(as specified in table 2(II).C,E)*																									
F(a). Consumption of Halocarbons and SF_6 (actual emissions - Tier 2)																									
1. Refrigeration and Air Conditioning Equipment																									
2. Foam Blowing																									
3. Fire Extinguishers																									
4. Aerosols/Metered Dose Inhalers																									
5. Solvents																									
6. Other applications using ODS[3] substitutes																									
7. Semiconductor Manufacture																									
8. Electrical Equipment																									
9. Other *(as specified in table 2(II)F)*																									
G. Other *(please specify)*																									

Note:
1. All footnotes for this table are given at the end of the table on sheet 2.
2. Gases with global warming potential (GWP) values not yet agreed upon by the Conference of the Parties should be reported in table 9(b).

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs[1]	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	c-C_4F_8	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs[1]	Total PFCs	SF_6
	(t)[2]													CO_2 equivalent (Gg)		(t)[2]							CO_2 equivalent (Gg)		(t)[2]
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF_6[4]																									
Production[5]																									
Import:																									
In bulk																									
In products[6]																									
Export:																									
In bulk																									
In products[6]																									
Destroyed amount																									

GWP values used	**11700**	**650**	**150**	**1300**	**2800**	**1000**	**1300**	**140**	**300**	**3800**	**2900**	**6300**	**560**			**6500**	**9200**	**7000**	**7000**	**8700**	**7500**	**7400**			**23900**
Total Actual Emissions[7] (CO_2 equivalent (Gg))																									
C. Metal Production																									
E. Production of Halocarbons and SF_6																									
F(a). Consumption of Halocarbons and SF_6																									
G. Other																									

Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF_6																									
Actual emissions - F(a) (Gg CO_2 eq.)																									
Potential emissions - F(p)[8] (Gg CO_2 eq.)																									
Potential/Actual emissions ratio																									

[1] In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), these columns could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for these columns is Gg of CO_2 equivalent.

[2] Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. *t* instead of *Gg*.

[3] ODS: ozone-depleting substances

[4] Potential emissions of each chemical of halocarbons and SF_6 estimated using Tier 1a or Tier 1b of the IPCC Guidelines (Volume 3. Reference Manual, pp. 2.47-2.50). Where potential emission estimates are available in a disaggregated manner for the source categories F.1 to F.9, these should be reported in the NIR and a reference should be provided in the documentation box. Use table Summary 3 to indicate whether Tier 1a or Tier 1b was used.

[5] Production refers to production of new chemicals. Recycled substances could be included here, but avoid double counting of emissions. An indication as to whether recycled substances are included should be provided in the documentation box to this table.

[6] Relevant only for Tier 1b.

[7] Total actual emissions equal the sum of the actual emissions of each halocarbon and SF_6 from the source categories 2.C, 2.E, 2.F and 2.G as reported in sheet 1 of this table multiplied by the corresponding GWP values.

[8] Potential emissions of each halocarbon and SF_6 taken from row F(p) multiplied by the corresponding GWP values.

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalent. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability. Gases with GWP values not yet agreed upon by the COP should be reported in Table 9 (b).

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) 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 "2.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 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production; Production of Halocarbons and SF_6

(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS					
			CF_4	C_2F_6	SF_6	CF_4		C_2F_6		SF_6	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description[1]	(t)	(kg/t)			(t)					
C. PFCs and SF_6 from Metal Production											
PFCs from Aluminium Production											
SF_6 used in Aluminium and Magnesium Foundries											
Aluminium Foundries	*(SF_6 consumption)*										
Magnesium Foundries	*(SF_6 consumption)*										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS						
			HFC-23	SF_6	HFCs/PFCs *(as specified)*	HFC-23		SF_6		HFCs/PFCs		
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	(specify chemical)	Emissions[3]	Recovery[4]
	Description[1]	(t)	(kg/t)			(t)						
E. Production of Halocarbons and SF_6												
1. By-product Emissions												
Production of HCFC-22												
Other *(please specify activity)*												
2. Fugitive Emissions *(please specify activity)*												
3. Other *(please specify activity)*												

[1] Specify the activity data used as shown in the examples in parentheses.

[2] The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final emissions (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) 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.
• Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
• Where applying Tier 1b (for source category 2.C), Tier 2 (for source category 2.E) and country-specific methods, specify any other relevant activity data used in this documentation box, including a reference to the section of the NIR where more detailed information can be found.
• Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the section of the NIR where more detailed information can be found.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1. Refrigeration[1]									
Air Conditioning Equipment									
Domestic Refrigeration *(please specify chemical)*[1]									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
Mobile Air-Conditioning									
2. Foam Blowing[1]									
Hard Foam									
Soft Foam									

[1] Under each of the listed source categories, specify the chemical consumed (*e.g. HFC-32)* as indicated under category Domestic Refrigeration; use one row per chemical.

Note: This table provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF_6 using the "bottom-up approach" (based on the total stock of equipment and estimated emission rates from this equipment). Some Parties may prefer to estimate actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). Those Parties should indicate the activity data used and provide any other information needed to understand the content of the table in the documentation box at the end of sheet 2 to this table, including a reference to the section of the NIR where further details can be found. Those Parties should provide the following data in the NIR:

1. the amount of fluid used to fill new products,
2. the amount of fluid used to service existing products,
3. the amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products),
4. the product lifetime, and
5. the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

In the NIR, Parties may provide alternative formats for reporting equivalent information with a similar level of detail.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3. Fire Extinguishers *(please specify chemical)*[1]									
4. Aerosols[1]									
Metered Dose Inhalers									
Other									
5. Solvents[1]									
6. Other applications using ODS[2] **substitutes**[1]									
7. Semiconductors[1]									
8. Electrical Equipment[1]									
9. Other ***(please specify)***[1]									

[1] Under each of the listed source categories, specify the chemical consumed (e.g. HFC-32) as indicated under category Fire Extinguishers; use one row per chemical.
[2] ODS: ozone-depleting substances.

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) 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.
• Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
• With regard to data on the amounts of fluid that remained in retired products at decommissioning, use this documentation box to provide a reference to the section of the NIR where information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation can be found.
• Parties that estimate their actual emissions following the alternative top-down approach might not be able to report emissions using this table. As indicated in the note to sheet 1 of this table, Parties should in these cases provide, in the NIR, alternative formats for reporting equivalent information with a similar level of detail. References to the relevant section of the NIR should be provided in this documentation box.

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
	(Gg)		
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other			
1. Use of N_2O for Anaesthesia			
2. N_2O from Fire Extinguishers			
3. N_2O from Aerosol Cans			
4. Other Use of N_2O			
5. Other *(as specified in table 3.A-D)*			

Note: The quantity of carbon released in the form of NMVOCs should be accounted for in both the NMVOC and the CO_2 columns. The quantities of NMVOCs should be converted into CO_2 equivalent emissions before being added to the CO_2 amounts in the CO_2 column.

Documentation box:

• Parties should provide detailed explanations about the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (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 IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O from Solvent and Other Product Use. If reporting such data, Parties should provide in the NIR additional information (activity data and emission factors) used to derive these estimates, and provide in this documentation box a reference to the section of the NIR where this information can be found.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[1]	
	Description	(kt)	CO_2 (t/t)	N_2O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other				
1. Use of N_2O for Anaesthesia				
2. N_2O from Fire Extinguishers				
3. N_2O from Aerosol Cans				
4. Other Use of N_2O				
5. Other *(please specify)*[2]				

[1] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into table 3.
[2] Some probable sources to be reported under 3.D Other are listed in this table. Complement the list with other relevant sources, as appropriate.

Documentation box:
Parties should provide detailed explanations on the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (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 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

Country
Year
Submission

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 4.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 4.B(a))*					

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

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
B. Manure Management (continued)					
11. Anaerobic Lagoons					
12. Liquid Systems					
13. Solid Storage and Dry Lot					
14. Other *(please specify)*					
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other *(as specified in table 4.C)*					
D. Agricultural Soils[(2)]					
1. Direct Soil Emissions					
2. Pasture, Range and Paddock Manure[(3)]					
3. Indirect Emissions					
4. Other *(as specified in table 4.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 4.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) See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D Agricultural Soils of the sector Agriculture should report the amount (in Gg) of these emissions or removals in table Summary 1.A of the CRF. References to additional information (activity data, emissions factors) reported in the NIR should be provided in the documentation box to table 4.D. In line with the corresponding table in the IPCC Guidelines (i.e. IPCC Sectoral Report for Agriculture), this table does not include provisions for reporting CO_2 estimates.

(3) Direct N_2O emissions from pasture, range and paddock manure are to be reported in the "4.D Agricultural Soils" category. All other N_2O emissions from animal manure are to be reported in the "4.B Manure Management" category. See also chapter 4.4 of the IPCC good practice guidance report.

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions and CH_4 and N_2O removals from agricultural soils, or CO_2 emissions from prescribed burning of savannas and field burning of agricultural residues. Parties that have estimated such emissions should provide, in the NIR, additional information (activity data and emission factors) used to derive these estimates and include a reference to the section of the NIR in the documentation box of the corresponding Sectoral background data tables.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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 "4.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 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric Fermentation
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS[3]
	Population size[1] (1000s)	Average gross energy intake (GE) (MJ/head/day)	Average CH_4 conversion rate (Y_m)[2] (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Option A:				
Dairy *Cattle*[4]				
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 *(please specify)*				

Additional information (only for those livestock types for which Ttier 2 was used)[a]

Disaggregated list of animals[b] / Indicators:		Dairy Cattle	Non-Dairy Cattle	Other *(specify)*	
Weight	(kg)				
Feeding situation[c]					
Milk yield	(kg/day)				
Work	(h/day)				
Pregnant	(%)				
Digestibility of feed	(%)				

[a] See also Tables A-1 and A-2 of the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.
[b] Disaggregate to the split actually used. Add columns to the table if necessary.
[c] Specify feeding situation as pasture, stall fed, confined, open range, etc.

[1] Parties are encouraged to provide detailed livestock population data by animal type and region, if available, in the NIR, and provide in the documentation box below a reference to the relevant section. Parties should use the same animal population statistics to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the Waste sector.
[2] Y_m refers to the fraction of gross energy in feed converted to methane and should be given in per cent in this table.
[3] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.
[4] Including data on dairy heifers, if available.

Documentation box:
• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.
• Indicate in this documentation box whether the activity data used are one-year estimates or a three-year averages.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or three-year averages.
(b) parameters relevant to the application of IPCC good practice guidance.

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH_4 Emissions from Manure Management
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS[4]
	Population size (1000s)	Allocation by climate region[1] (%)			Typical animal mass (average) (kg)	VS[2] daily excretion (average) (kg dm/head/day)	CH_4 producing potential (Bo)[2] (average) (m^3 CH_4/kg VS)	CH_4 (kg CH_4/head/yr)
		Cool	Temperate	Warm				
1. Cattle								
Option A:								
Dairy Cattle[3]								
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 *(please specify)*								

[1] Climate regions are defined in terms of annual average temperature as follows: Cool = less than 15°C; Temperate = 15 - 25°C inclusive; and Warm = greater than 25°C (see table 4.2 of the IPCC Guidelines (Volume 3, Reference Manual, p. 4.8)).

[2] VS = Volatile Solids; Bo = maximum methane producing capacity for manure IIPCC Guidelines (Volume 3, Reference Manual, p.4.23 and p.4.15); dm = dry matter. Provide average values for VS and Bo where original calculations were made at a more disaggregated level of these livestock categories.

[3] Including data on dairy heifers, if available.

[4] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into table 4.

Additional information (for Tier 2) [a]

Animal category	Indicator	Climate region	Animal waste management system						
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage	Dry lot	Pasture range paddock	Other
Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Non-Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Swine	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Other livestock *(please specify)*	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							

[a] The information required in this table may not be directly applicable to country-specific methods developed for MCF calculations. In such cases, information on MCF derivation should be described in the NIR and references to the relevant sections of the NIR should be provided in the documentation box.

[b] MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3. Reference Manual, p. 4.9)). If another climate region categorization is used, replace the entries in the cells with the climate regions for which the MCFs are specified.

Documentation box:

• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

• Indicate in this documentation box whether the activity data used are one-year estimates or three-year averages.

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

(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or three-year averages.

(b) parameters relevant to the application of IPCC good practice guidance;

(c) information on how the MCFs are derived, if relevant data could not be provided in the additional information box.

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE
N_2O Emissions from Manure Management
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS[1]	
	Population size	Nitrogen excretion	Nitrogen excretion per animal waste management system (AWMS) (kg N/yr)						Emission factor per animal waste management system	
	(1000s)	(kg N/head/yr)	Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other	(kg N_2O-N/kg N)	
Cattle									Anaerobic lagoon	
Option A:									Liquid system	
Dairy Cattle									Solid storage and dry lot	
Non-Dairy Cattle									Other AWMS	
Option B:										
Mature Dairy Cattle										
Mature Non-Dairy Cattle										
Young Cattle										
Sheep										
Swine										
Poultry										
Other livestock *(please specify)*										
Total per AWMS										

[1] The implied emission factor will not be calculated until the emissions are entered directly into table 4.

Documentation box:
• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.
• Indicate in this documentation box whether the activity data used are one-year estimates or three-year averages.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or three-year averages.
(b) information on other AWMS, if reported.

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE
Rice Cultivation
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR[1]	EMISSIONS
		Harvested area[2] (10^9 m^2/yr)	Organic amendments added[3] type	Organic amendments added[3] (t/ha)	CH_4 (g/m^2)	CH_4 (Gg)
1. Irrigated						
Continuously Flooded						
Intermittently Flooded	Single Aeration					
	Multiple Aeration					
2. Rainfed						
Flood Prone						
Drought Prone						
3. Deep Water						
Water Depth 50-100 cm						
Water Depth > 100 cm						
4. Other *(please specify)*						
Upland Rice[4]						
Total[4]						

[1] The implied emission factor implicitly takes account of all relevant corrections for continuously flooded fields without organic amendment, the correction for the organic amendments and the effect of different soil characteristics, if considered in the calculation of methane emissions.
[2] Harvested area is the cultivated area multiplied by the number of cropping seasons per year.
[3] Specify dry weight or wet weight for organic amendments in the documentation box.
[4] These rows are included to allow comparison with international statistics. Methane emissions from upland rice are assumed to be zero.

Documentation box:
• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.
• When disaggregating by more than one region within a country, and/or by growing season, provide additional information on disaggregation and related data in the NIR and provide a reference to the relevant section in the NIR.
• Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE
Agricultural Soils
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value kg N/yr	kg N_2O-N/kg N[(2)]	N_2O (Gg)
1. Direct Soil Emissions	**N input to soils**			
1. Synthetic Fertilizers	Nitrogen input from application of synthetic fertilizers			
2. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils			
3. N-fixing Crops	Nitrogen fixed by N-fixing crops			
4. Crop Residue	Nitrogen in crop residues returned to soils			
5. Cultivation of Histosols[(1)]	Area of cultivated organic soils (ha/yr)			
6. Other direct emissions *(please specify)*				
2. Pasture, Range and Paddock Manure	**N excretion on pasture range and paddock**			
3. Indirect Emissions				
1. Atmospheric Deposition	Volatized N from fertilizers, animal manures and other			
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run-off			
4. Other *(please specify)*				

[(1)] Note that for cultivation of Histosols the unit of the IEF is kg N_2O-N/ha.
[(2)] To convert from N_2O-N to N_2O emissions, multiply by 44/28.

Additional information

Fraction[(a)]	Description	Value
$Frac_{BURN}$	Fraction of crop residue burned	
$Frac_{FUEL}$	Fraction of livestock N excretion in excrements burned for fuel	
$Frac_{GASF}$	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NOx	
$Frac_{GASM}$	Fraction of livestock N excretion that volatilizes as NH_3 and NOx	
$Frac_{GRAZ}$	Fraction of livestock N excreted and deposited onto soil during grazing	
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and run-off	
$Frac_{NCRBF}$	Fraction of total above-ground biomass of N-fixing crop that is N	
$Frac_{NCRO}$	Fraction of residue dry biomass that is N	
$Frac_{R}$	Fraction of total above-ground crop biomass that is removed from the field as a crop product	
Other fractions *(please specify)*		

[(a)] Use the definitions for fractions as specified in the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.92-4.113) as elaborated by the IPCC good practice guidance (pp. 4.54-4.74).

Documentation box:
• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE Country

Prescribed Burning of Savannas Year

(Sheet 1 of 1) Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned (kha/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)
(specify ecological zone)									

Additional information

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

Documentation box:

Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS		EMISSIONS	
	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 6: Agriculture (CRF sector 4) 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 5 SECTORAL REPORT FOR LAND USE, LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO_2 emissions/ removals[1], [2]	CH_4 [2]	N_2O [2]	NO_x	CO	NMVOC
	(Gg)					
Total Land-Use Categories						
A. Forest Land						
1. Forest Land remaining Forest Land						
2. Land converted to Forest Land						
B. Cropland						
1. Cropland remaining Cropland						
2. Land converted to Cropland						
C. Grassland						
1. Grassland remaining Grassland						
2. Land converted to Grassland						
D. Wetlands						
1. Wetlands remaining Wetlands (3)						
2. Land converted to Wetlands						
E. Settlements						
1. Settlements remaining Settlements (3)						
2. Land converted to Settlements						
F. Other Land						
1. Other Land remaining Other Land (4)						
2. Land converted to Other Land						
G. Other *(please specify)* [5]						
Harvested Wood Products [6]						
Information items[7]						
Forest Land converted to other Land-Use Categories						
Grassland converted to other Land-Use Categories						

[1] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] For each land-use category and sub-category, this table sums net CO2 emissions and removals shown in tables 5.A to 5.F, and the CO2, CH4 and N2O emissions showing in tables 5(I) to 5(V).
[3] Parties may decide not to prepare estimates for these categories contained in appendices 3a.3 and 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.
[4] This land-use category is to allow the total of identified land area to match the national area.
[5] The total for category 5.G Other includes items specified only under category 5.G in this table as well as sources and sinks specified in category 5.G in tables 5(I) to 5(V).
[6] Parties may decide not to prepare estimates for this category contained in appendix 3a.1 of the IPCC good practice guidance for LULUCF, although they may do so if they wish and report in this row.
[7] These items are listed for information only and will not be added to the totals, because they are already included in subcategories 5.A.2 to 5.F.2.

Documentation box:
• Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.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 5.A SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Forest Land
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						
Land-Use Category	Sub-division[1]	Area[2] (kha)	Area of organic soil[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass[3] [4]			Net carbon stock change in dead organic matter[4]	Net carbon stock change in soils [4] [6]		Net CO_2 emissions/ removals [8] [9]
				Gains	Losses	Net change		Mineral soils [5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils [7]	
				(Mg C/ha)						(Gg C)						(Gg)
A. Total Forest Land																
1. Forest Land remaining Forest Land																
2. Land converted to Forest Land(10)																
2.1 Cropland converted to Forest Land																
2.2 Grassland converted to Forest Land																
2.3 Wetlands converted to Forest Land																
2.4 Settlements converted to Forest Land																
2.5 Other Land converted to Forest Land																

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Forest Land report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.
[6] When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.
[7] The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.
[8] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[9] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[10] A Party may report aggregate estimates for all conversions of land to forest land when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.B SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Cropland
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals [10] [11]
Land-Use Category	Sub-division [1]	Area [2] (kha)	Area of organic soil (kha) [2]	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area [4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass [3], [4], [6]			Net carbon stock change in dead organic matter [4] [7]	Net carbon stock change in soils [4][8]		
				Gains	Losses	Net change		Mineral soils [5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils [9]	
				(Mg C/ha)						(Gg C)						(Gg)
B. Total Cropland																
1. Cropland remaining Cropland																
2. Land converted to Cropland [12]																
2.1 Forest Land converted to Cropland																
2.2 Grassland converted to Cropland																
2.3 Wetlands converted to Cropland																
2.4 Settlements converted to Cropland																
2.5 Other Land converted to Cropland																

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Cropland report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.
[6] For category 5.B.1 Cropland remaining Cropland this column only includes changes in perennial woody biomass.
[7] No reporting on dead organic matter pools is required for category 5.B.1. Cropland remaining Cropland.
[8] When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.
[9] The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.
[10] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[11] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[12] A Party may report aggregate estimates for all land conversions to cropland, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.C SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Grassland
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals [10] [11]
Land-Use Category	Sub-division [1]	Area [2] (kha)	Area of organic soil (kha) [2]	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area [4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass [3] [4] [6]			Net carbon stock change in dead organic matter [4] [7]	Net carbon stock change in soils [4] [8]		
				Gains	Losses	Net change		Mineral soils [5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils [9]	
				(Mg C/ha)						(Gg C)						(Gg)
C. Total Grassland																
1. Grassland remaining Grassland																
2. Land converted to Grassland [12]																
2.1 Forest Land converted to Grassland																
2.2 Cropland converted to Grassland																
2.3 Wetlands converted to Grassland																
2.4 Settlements converted to Grassland																
2.5 Other Land converted to Grassland																

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Grassland report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.
[6] For category 5.C.1 Grassland remaining Grassland this column only includes changes in perennial woody biomass.
[7] No reporting on dead organic matter pools is required for category 5.C.1 Grassland remaining Grassland.
[8] When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.
[9] The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.
[10] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[11] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[12] A Party may report aggregate estimates for all land conversions to grassland, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.D SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Wetlands
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO_2 emissions/ removals [5] [6]
Land-Use Category	Sub-division [1]	Area [2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area [4]	Net carbon stock change in soils per area [4]	Carbon stock change in living biomass [3] [4]			Net carbon stock change in dead organic matter [4]	Net carbon stock change in soils [4]	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					(Gg)
D. Total Wetlands													
1. Wetlands remaining Wetlands [7]													
2. Land converted to Wetlands [8]													
2.1 Forest Land converted to Wetlands													
2.2 Cropland converted to Wetlands													
2.3 Grassland converted to Wetlands													
2.4 Settlements converted to Wetlands													
2.5 Other Land converted to Wetlands													

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Wetlands report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[6] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[7] Parties may decide not to prepare estimates for this category contained in appendix 3a.3 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.
[8] A Party may report aggregate estimates for all land conversions to wetlands, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.E SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Settlements
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO_2 emissions/ removals [6] [7]
Land-Use Category	Sub-division [1]	Area[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]	Carbon stock change in living biomass[3], [4] [5]			Net carbon stock change in dead organic matter[4]	Net carbon stock change in soils [4]	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					(Gg)
E. Total Settlements													
1. Settlements remaining Settlements [8]													
2. Land converted to Settlements[9]													
2.1 Forest Land converted to Settlements													
2.2 Cropland converted to Settlements													
2.3 Grassland converted to Settlements													
2.4 Wetlands converted to Settlements													
2.5 Other Land converted to Settlements													

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Settlements report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] For category 5.E.1 Settlements remaining Settlements this column only includes changes in perennial woody biomass.
[6] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[7] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[8] Parties may decide not to prepare estimates for this category contained in appendix 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.
[9] A Party may report aggregate estimates for all land conversions to settlements, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5.F SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Other land
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO_2 emissions/ removals [5] [6]
Land-Use Category	Sub-division[1]	Area[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]	Carbon stock change in living biomass[3], [4]			Net carbon stock change in dead organic matter[4]	Net carbon stock change in soils [4]	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					(Gg)
F. Total Other Land													
1. Other Land remaining Other Land [7]													
2. Land converted to Other Land [8]													
2.1 Forest Land converted to Other Land													
2.2 Cropland converted to Other Land													
2.3 Grassland converted to Other Land													
2.4 Wetlands converted to Other Land													
2.5 Settlements converted to Other Land													

[1] Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.
[2] The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Other Land report the cumulative area remaining in the category in the reporting year.
[3] Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.
[4] The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).
[5] According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO_2 by multiplying C by 44/12 and changing the sign for net CO_2 removals to be negative (-) and for net CO_2 emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.
[6] Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.
[7] This land-use category is to allow the total of identified land area to match the national area.
[8] A Party may report aggregate estimates for all land conversions to other land, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5 (I) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY Year

Direct N_2O emissions from N fertilization[(1)] of Forest Land and Other Submission

(Sheet 1 of 1) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS [(4)]
Land-Use Category [(2)]	**Total amount of fertilizer applied (Gg N/yr)**	**N_2O-N emissions per unit of fertilizer (kg N_2O-N/kg N)[(3)]**	**N_2O (Gg)**
Total for all Land Use Categories			
A. Forest Land [(5) (6)]			
1. Forest Land remaining Forest Land			
2. Land converted to Forest Land			
G. Other *(please specify)*			

[(1)] Direct N_2O emissions from fertilization are estimated using equations 3.2.17 and 3.2.18 of the IPCC good practice guidance for LULUCF based on the amounts of fertilizers applied to forest land.
[(2)] N_2O emissions from N fertilization of cropland and grassland are reported in the Agriculture sector; therefore only Forest Land is included in this table.
[(3)] In the calculation of the implied emission factor, N_2O emissions are converted to N_2O-N by multiplying by 28/44.
[(4)] Emissions are reported with a positive sign.
[(5)] If a Party is not able to separate the fertilizer applied to forest land from that applied to agriculture, it may report all N_2O emissions from fertilization in the Agriculture sector. This should be explicitly indicated in the documentation box.
[(6)] A Party may report aggregate estimates for all N fertilization on forest land in the category Forest Land remaining Forest Land when data are not available to report Forest Land remaining Forest Land and Land converted to Forest Land separately.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5 (II) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY Year
Non-CO_2 emissions from drainage of soils and wetlands[1] Submission
(Sheet 1 of 1) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS [5]	
Land-Use Category [2]	Sub-division [3]	Area (kha)	N_2O-N per area [4] (kg N_2O-N/ha)	CH_4 per area (kg CH_4/ha)	N_2O (Gg)	CH_4 (Gg)
Total all Land-Use Categories						
A. Forest Land [6]						
Organic Soil						
Mineral Soil						
D. Wetlands						
Peatland [7]						
Flooded Lands [7]						
G. Other (please specify)						

[1] Parties may decide not to prepare estimates for these categories contained in appendices 3a.2 and 3a.3 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.
[2] N_2O emissions from drained cropland and grassland soils are covered in the Agriculture tables of the CRF under Cultivation of Histosols.
[3] A Party should report further disaggregations of drained soils corresponding to the methods used. Tier 1 disaggregates soils into "nutrient rich" and "nutrient poor" areas, whereas higher-tier methods can further disaggregate into different peatland types, soil fertility or tree species.
[4] In the calculation of the implied emission factor, N_2O emissions are converted to N_2O-N by multiplying by 28/44.
[5] Emissions are reported with a positive sign.
[6] In table 5, these emissions will be added to 5.A.1 Forest Land remaining Forest Land.
[7] In table 5, these emissions will be added to 5.D.2 Land converted to Wetlands.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5 (III) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
N_2O emissions from disturbance associated with land-use conversion to cropland [1]
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS [4]
Land-Use Category [2]	Land area converted (kha)	N_2O-N emissions per area converted[3] (kg N_2O-N/ha)	N_2O (Gg)
Total all Land-Use Categories [5]			
B. Cropland			
2. Lands converted to Cropland [6]			
Organic Soils			
Mineral Soils			
2.1 Forest Land converted to Cropland			
Organic Soils			
Mineral Soils			
2.2 Grassland converted to Cropland			
Organic Soils			
Mineral Soils			
2.3 Wetlands converted to Cropland [7]			
Organic Soils			
Mineral Soils			
2.5 Other Land converted to Cropland			
Organic Soils			
Mineral Soils			
G. Other *(please specify)*			

[1] Methodologies for N_2O emissions from disturbance associated with land-use conversion are based on equations 3.3.14 and 3.3.15 of the IPCC good practice guidance for LULUCF. N_2O emissions from fertilization in the preceding land use and new land use should not be reported.
[2] According to the IPCC good practice guidance for LULUCF, N_2O emissions from disturbance of soils are only relevant for land conversions to cropland. N_2O emissions from Cropland remaining Cropland are included in the Agriculture sector of the good practice guidance. The good practice guidance provides methodologies only for mineral soils.
[3] In the calculation of the implied emission factor, N_2O emissions are converted to N_2O-N by multiplying by 28/44.
[4] Emissions are reported with a positive sign.
[5] Parties can separate between organic and mineral soils, if they have data available.
[6] If activity data cannot be disaggregated to all initial land uses, Parties may report some initial land uses aggregated under Other Land converted to Cropland (indicate in the documentation box what this category includes).
[7] Parties should avoid double counting with N_2O emissions from drainage and from cultivation of organic soils reported in Agriculture under Cultivation of Histosols.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF Sector 5) 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 5 (IV) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY Year
CO_2 emissions from agricultural lime application[1] Submission
(Sheet 1 of 1) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS [3]
Land-Use Category	Total amount of lime applied (Mg/yr)	CO_2-C per unit of lime [2] (Mg CO_2-C /Mg)	CO_2 (Gg)
Total all Land-Use Categories [4], [5], [6]			
B. Cropland [6] [7]			
Limestone $CaCO_3$			
Dolomite $CaMg(CO_3)_2$			
C. Grassland [6][8]			
Limestone $CaCO_3$			
Dolomite $CaMg(CO_3)_2$			
G. Other *(please specify)* [6] [9]			

[1] CO_2 emissions from agricultural lime application are addressed in equations 3.3.6 and 3.4.11 of the IPCC good practice guidance for LULUCF.
[2] The implied emission factor is expressed in unit of carbon to faciliate comparison with published emission factors.
[3] Emissions are reported with a positive sign.
[4] If Parties are not able to separate liming application for different land-use categories, they should include liming for all land-use categories in the category 5.G Other.
[5] Parties that are able to provide data for lime application to forest land should provide this information under 5.G Other and specify in the documentation box that forest land application is included in this category.
[6] A Party may report aggregate estimates for total lime applications when data are not available for limestone and dolomite.
[7] In table 5, these CO_2 emissions will be added to 5.B.1 Cropland remaining Cropland.
[8] In table 5, these CO_2 emissions will be added to 5.C.1 Grassland remaining Grassland.
[9] If a Party has data broken down to limestone and dolomite at national level, it can report these data under 5.G Other.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 5 (V) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
Biomass Burning [1]
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			IMPLIED EMISSION FACTOR			EMISSIONS [5]		
	Description [3]	Unit	Values	CO_2	CH_4	N_2O	CO_2 [4]	CH_4	N_2O
Land-Use Category [2]		(ha or kg dm)		(Mg/activity data unit)			(Gg)		
Total for Land-Use Categories									
A. Forest Land									
1. Forest land remaining Forest Land									
Controlled Burning									
Wildfires									
2. Land converted to Forest Land									
Controlled Burning									
Wildfires									
B. Cropland									
1. Cropland remaining Cropland [6]									
Controlled Burning									
Wildfires									
2. Land converted to Cropland									
Controlled Burning									
Wildfires									
2.1. Forest Land converted to Cropland									
Controlled Burning									
Wildfires									
C. Grassland									
1. Grassland remaining Grassland [7]									
Controlled Burning									
Wildfires									
2. Land converted to Grassland									
Controlled Burning									
Wildfires									
2.1. Forest Land converted to Grassland									
Controlled Burning									
Wildfires									
D. Wetlands									
1. Wetlands remaining Wetlands [8]									
Controlled Burning									
Wildfires									
2. Land converted to Wetlands									
Controlled Burning									
Wildfires									
2.1. Forest Land converted to Wetlands									
Controlled Burning									
Wildfires									
E. Settlements [8]									
F. Other Land [9]									
G. Other (please specify)									

[1] Methodological guidance on burning can be found in sections 3.2.1.4 and 3.4.1.3 of the IPCC good practice guidance for LULUCF.
[2] Parties should report both controlled/prescribed burning and wildfires emissions, where appropriate, in a separate manner.
[3] For each category activity data should be selected between area burned or biomass burned. Units for area will be ha and for biomass burned kg dm. The implied emission factor will refer to the selected activity data with an automatic change in the units.
[4] If CO_2 emissions from biomass burning are not already included in tables 5.A - 5.F, they should be reported here. This should be clearly documented in the documentation box and in the NIR. Double counting should be avoided. Parties that include all carbon stock changes in the carbon stock tables (5.A, 5.B, 5.C, 5.D, 5.E and 5.F), should report IE (included elsewhere) in this column.
[5] Emissions are reported with a positive sign.
[6] In-situ above-ground woody biomass burning is reported here. Agricultural residue burning is reported in the Agriculture sector.
[7] Includes only emissions from controlled biomass burning on grasslands outside the tropics (prescribed savanna burning is reported under the Agriculture sector).
[8] Parties may decide not to prepare estimates for these categories contained in appendices 3a.2, 3a.3 and 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.
[9] This land-use category is to allow the total of identified land area to match the national area.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) 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 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[(1)]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A. Solid Waste Disposal on Land							
. Managed Waste Disposal on Land							
. Unmanaged Waste Disposal Sites							
. Other *(as specified in table 6.A)*							
B. Waste-Water Handling							
. Industrial Waste Water							
. Domestic and Commercial Waste Water							
. Other *(as specified in table 6.B)*							
C. Waste Incineration							
D. Other *(please specify)*							

(1) CO_2 emissions from source categories Solid Waste Disposal on Land and Waste Incineration should only be included if they derive from non-biological or inorganic waste sources.

Documentation box:
• Parties should provide detailed explanations on the Waste sector in Chapter 8: Waste (CRF sector 6) 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 6.D 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 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS		
	Annual MSW at the SWDS	MCF	DOC degraded	CH_4[1]	CO_2	CH_4		CO_2[4]
						Emissions[2]	Recovery[3]	
	(Gg)		%	(t /t MSW)		(Gg)		
1 Managed Waste Disposal on Land								
2 Unmanaged Waste Disposal Sites								
a. Deep (>5 m)								
b. Shallow (<5 m)								
3 Other *(please specify)*								

Additional information

Description	Value
Total population (1000s)[a]	
Urban population (1000s)[a]	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
CH_4 oxidation factor[b]	
CH_4 fraction in landfill gas	
CH_4 generation rate constant (k)[c]	
Time lag considered (yr)[c]	

Note: MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (IPCC Guidelines (Volume 3. Reference Manual, section 6.2.4)).

MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

[1] The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered)/annual MSW at the SWDS.
[2] Actual emissions (after recovery).
[3] CH_4 recovered and flared or utilized.
[4] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, whereas the CO_2 emissions from biogenic wastes are not included in the total emissions.

[a] Specify whether total or urban population is used and the rationale for doing so
[b] See IPCC Guidelines (Volume 3. Reference Manual, p. 6.9).
[c] Only for Parties using Tier 2 methods

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR			EMISSIONS		
	Amount of incinerated wastes	CO_2	CH_4	N_2O	CO_2[1]	CH_4	N_2O
	(Gg)	(kg/t waste)			(Gg)		
Waste Incineration							
a. Biogenic[1]							
b. Other (non-biogenic - *please specify*)[1], [2]							

[1] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, while the CO_2 emissions from biogenic wastes are not included in the total emissions.
[2] Enter under this source category all types of non-biogenic wastes, such as plastics.

Note: Only emissions from waste incineration without energy recovery are to be reported in the Waste sector. Emissions from incineration with energy recovery are to be reported in the Energy sector, as Other Fuels (see IPCC good practice guidance, page 5.23).

Documentation box:
• Parties should provide detailed explanations on the Waste sector in Chapter 8: Waste (CRF sector 6) 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.
• Parties that use country-specific models should provide a reference in the documentation box to the relevant section in the NIR where these models are described, and fill in only the relevant cells of tables 6.A and 6.C.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) Population size (total or urban population) used in the calculations and the rationale for doing so;
(b) Composition of landfilled waste;
(c) Amount of incinerated wastes (specify whether the reported data relate to wet or dry matter).

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Waste-Water Handling
(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION[1]	IMPLIED EMISSION FACTOR		EMISSIONS		
				CH_4		N_2O[3]
	Total organic product	CH_4[2]	N_2O[3]	Emissions[4]	Recovery[5]	
	(Gg DC[1]/yr)	(kg/kg DC)		(Gg)		
1. Industrial Waste Water						
a. Waste Water						
b. Sludge						
2. Domestic and Commercial Waste Water						
a. Waste Water						
b. Sludge						
3. Other *(please specify)*						
[6]						
a. Waste Water						
b. Sludge						
[6]						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population (1000s)	Protein consumption (kg/person/yr)	N fraction (kg N/kg protein)	N_2O (kg N_2O-N/kg sewage N produced)	N_2O (Gg)
N_2O from human sewage[3]					

Additional information

	Domestic	Industrial
Total waste water (m^3):		
Treated waste water (%):		

Waste-water streams:	Waste-water output (m^3)	DC (kg COD/m^3)
Industrial waste water		
Iron and steel		
Non-ferrous		
Fertilizers		
Food and beverage		
Paper and pulp		
Organic chemicals		
Other *(please specify)*		
DC (kg BOD/1000 person/yr)		
Domestic and Commercial		
Other *(please specify)*		

Handling systems:	Industrial waste water treated (%)	Industrial sludge treated (%)	Domestic waste water treated (%)	Domestic sludge treated (%)
Aerobic				
Anaerobic				
Other *(please specify)*				

[1] DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial waste water and BOD (Biochemical Oxygen Demand) for Domestic/Commercial waste water/sludge (IPCC Guidelines (Volume 3. Reference Manual, pp. 6.14, 6.18)).

[2] The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered or flared) / total organic product.

[3] Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or waste-water treatment should provide aggregate data in this table.

[4] Actual emissions (after recovery).

[5] CH_4 recovered and flared or utilized.

[6] Use these cells to specify each activity covered under "6.B.3 Other". Note that under each reported activity, data for waste water and sludge are to be reported separately.

Documentation box:

- Parties should provide detailed explanations on the Waste sector in Chapter 8: Waste (CRF sector 6) 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.
- Regarding the estimates for N_2O from human sewage, specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.
- Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or waste-water treatment should provide, in the NIR, corresponding information on methods, activity data and emission factors used, and should provide a reference to the relevant section of the NIR in this documentation box.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 1 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO_2 emissions/ removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals													
1. Energy													
A. Fuel Combustion — Reference Approach[2]													
A. Fuel Combustion — Sectoral Approach[2]													
1. Energy Industries													
2. Manufacturing Industries and Construction													
3. Transport													
4. Other Sectors													
5. Other													
B. Fugitive Emissions from Fuels													
1. Solid Fuels													
2. Oil and Natural Gas													
2. Industrial Processes													
A. Mineral Products													
B. Chemical Industry													
C. Metal Production													
D. Other Production(3)													
E. Production of Halocarbons and SF6													
F. Consumption of Halocarbons and SF6													
G. Other													

Note: **A** = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 2 of 3)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO_2 emissions/ removals	CH_4	N_2O	$HFCs^{(1)}$		$PFCs^{(1)}$		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	CO_2 equivalent (Gg)									(Gg)			
3. Solvent and Other Product Use													
4. Agriculture													
A. Enteric Fermentation													
B. Manure Management													
C. Rice Cultivation													
D. Agricultural Soils[4]													
E. Prescribed Burning of Savannas													
F. Field Burning of Agricultural Residues													
G. Other													
5. Land Use, Land-Use Change and Forestry	[5]												
A. Forest Land	[5]												
B. Cropland	[5]												
C. Grassland	[5]												
D. Wetlands	[5]												
E. Settlements	[5]												
F. Other Land	[5]												
G. Other	[5]												
6. Waste													
A. Solid Waste Disposal on Land	[6]												
B. Waste-water Handling													
C. Waste Incineration	[6]												
D. Other													
7. Other *(please specify)*[7]													

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO_2 emissions/ removals	CH_4	N_2O	HFCs		PFCs		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
Memo Items:[8]													
International Bunkers													
Aviation													
Marine													
Multilateral Operations													
CO_2 Emissions from Biomass													

(1) The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.
(2) For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the results from the Sectoral approach should be used, where possible.
(3) Other Production includes Pulp and Paper and Food and Drink Production.
(4) Parties which previously reported CO_2 from soils in the Agriculture sector should note this in the NIR.
(5) For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
(6) CO_2 from source categories Solid Waste Disposal on Land and Waste Incineration should only be included if it stems from non-biogenic or inorganic waste streams. Only emissions from Waste Incineration Without Energy Recovery are to be reported in the Waste sector, whereas emissions from Incineration With Energy Recovery are to be reported in the Energy sector.
(7) If reporting any country-specific source category under sector "7. Other", detailed explanations should be provided in Chapter 9: Other (CRF sector 7) of the NIR.
(8) Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the Energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO_2 emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO_2 emissions are accounted for as a loss of biomass stocks in the Land Use, Land-Use Change and Forestry sector.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO_2 emissions/ removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals													
1. Energy													
A. Fuel Combustion — Reference Approach[2]													
A. Fuel Combustion — Sectoral Approach[2]													
B. Fugitive Emissions from Fuels													
2. Industrial Processes													
3. Solvent and Other Product Use													
4. Agriculture[3]													
5. Land Use, Land-Use Change and Forestry	[4]												
6. Waste													
7. Other													
Memo Items:[5]													
International Bunkers													
Aviation													
Marine													
Multilateral Operations													
CO_2 Emissions from Biomass													

Note: A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

(1) The emissions of HFCs and PFCs are to be expressed as CO2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

(2) For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the result from the Sectoral approach should be used, where possible.

(3) Parties which previously reported CO_2 from soils in the Agriculture sector should note this in the NIR.

(4) For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

(5) Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO_2 emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO_2 emissions are accounted for as a loss of biomass stocks in the Land Use, Land-Use Change and Forestry sector.

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs [2]	PFCs [2]	SF_6 [2]	Total
	CO_2 equivalent (Gg)						
Total (Net Emissions) [1]							
1. Energy							
A. Fuel Combustion (Sectoral Approach)							
1. Energy Industries							
2. Manufacturing Industries and Construction							
3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF_6							
F. Consumption of Halocarbons and SF_6 [2]							
G. Other							
3. Solvent and Other Product Use							
4. Agriculture							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils [3]							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
5. Land Use, Land-Use Change and Forestry [1]							
A. Forest Land							
B. Cropland							
C. Grassland							
D. Wetlands							
E. Settlements							
F. Other Land							
G. Other							
6. Waste							
A. Solid Waste Disposal on Land							
B. Waste-water Handling							
C. Waste Incineration							
D. Other							
7. Other ***(as specified in Summary 1.A)***							

Memo Items: [4]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

Total CO_2 Equivalent Emissions without Land Use, Land-Use Change and Forestry	
Total CO_2 Equivalent Emissions with Land Use, Land-Use Change and Forestry	

[1] For CO_2 from Land Use, Land-use Change and Forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[2] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.
[3] Parties which previously reported CO_2 from soils in the Agriculture sector should note this in the NIR.
[4] See footnote 8 to table Summary 1.A.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
1. Energy												
A. Fuel Combustion												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												

Use the following notation keys to specify the method applied:

D (IPCC default) **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively) **CR** (CORINAIR)
RA (Reference Approach) **T2** (IPCC Tier 2) **CS** (Country Specific)
T1 (IPCC Tier 1) **T3** (IPCC Tier 3) **OTH** (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box. Also use the documentation box to explain the use of notation OTH.

Use the following notation keys to specify the emission factor used:

D (IPCC default) **CS** (Country Specific) **OTH** (Other)
CR (CORINAIR) **PS** (Plant Specific)

Where a mix of emission factors has been used, list all the methods in the relevant cells and give further explanations in the documentation box. Also use the documentation box to explain the use of notation OTH.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land Use, Land-Use Change and Forestry												
A. Forest Land												
B. Cropland												
C. Grassland												
D. Wetlands												
E. Settlements												
F. Other Land												
G. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Wastre-water Handling												
C. Waste Incineration												
D. Other												
7. Other ***(as specified in Summary 1.A)***												

Use the following notation keys to specify the method applied:

D (IPCC default) **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively) **CR** (CORINAIR)
RA (Reference Approach) **T2** (IPCC Tier 2) **CS** (Country Specific)
T1 (IPCC Tier 1) **T3** (IPCC Tier 3) **OTH** (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box. Also use the documentation box to explain the use of notation OTH.

Use the following notation keys to specify the emission factor used:

D (IPCC default) **CS** (Country Specific) **OTH** (Other)
CR (CORINAIR) **PS** (Plant Specific)

Where a mix of emission factors has been used, list all the methods in the relevant cells and give further explanations in the documentation box. Also use the documentation box to explain the use of notation OTH.

Documentation box:

• Parties should provide the full information on methodological issues, such as methods and emission factors used, in the relevant sections of Chapters 3 to 9 (see section 2.2 of each of Chapters 3–9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

• Where a mix of methods/emission factors has been used within one source category, use this documentation box to specify those methods/emission factors for the various sub-sources where they have been applied.

• Where the notation OTH (Other) has been entered in this table, use this documentation box to specify those other methods/emission factors.

TABLE 7 SUMMARY OVERVIEW FOR KEY CATEGORIES
(Sheet 1 of 1)

Country
Year
Submission

KEY CATEGORIES OF EMISSIONS AND REMOVALS	GAS	CRITERIA USED FOR KEY CATEGORY IDENTIFICATION			Key category excluding LULUCF[1]	Key category including LULUCF[1]	COMMENTS[2]
		L	T	Q			
Specify key categories according to the national level of disaggregation used:							
For example: *4.B Manure management*	CH_4	*X*			*X*		

Note: L = Level assessment; T = Trend assessment; Q = Qualitative assessment.

[1] The term "key categories" refers to both the key source categories as addressed in the IPCC good practice guidance and the key categories as addressed in the IPCC good practice guidance for LULUCF.

[2] For estimating key categories Parties may chose the disaggregation level presented as an example in table 7.1 of the IPCC good practice guidance (page 7.6) and table 5.4.1 (page 5.31) of the IPCC good practice guidance for LULUCF, the level used in table Summary 1.A of the common reporting format or any other disaggregation level that the Party used to determine its key categories.

Documentation box:
Parties should provide the full information on methodologies used for identifying key categories and the quantitative results from the level and trend assessments (according to tables 7.1–7.3 of the IPCC good practice guidance and tables 5.4.1–5.4.3 of the IPCC good practice guidance for LULUCF) in Annex 1 to the NIR.

TABLE 8 (a) RECALCULATION - RECALCULATED DATA
(Sheet 1 of 4) Recalculated year:

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2						CH_4						N_2O					
		Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]
		CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)		
Total National Emissions and Removals																			
1. Energy																			
1.A.	Fuel Combustion Activities																		
1.A.1.	Energy Industries																		
1.A.2.	Manufacturing Industries and Construction																		
1.A.3.	Transport																		
1.A.4.	Other Sectors																		
1.A.5.	Other																		
1.B.	Fugitive Emissions from Fuels																		
1.B.1.	Solid fuel																		
1.B.2.	Oil and Natural Gas																		
2. Industrial Processes																			
2.A.	Mineral Products																		
2.B.	Chemical Industry																		
2.C.	Metal Production																		
2.D.	Other Production																		
2.G.	Other																		

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 8 (a) RECALCULATION - RECALCULATED DATA
(Sheet 2 of 4) Recalculated year:

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2						CH_4						N_2O					
		Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference [1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]
		CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)		
Total National Emissions and Removals																			
3. Solvent and Other Product Use																			
4. Agriculture																			
4.A.	Enteric Fermentation																		
4.B.	Manure Management																		
4.C.	Rice Cultivation																		
4.D.	Agricultural Soils [4]																		
4.E.	Prescribed Burning of Savannas																		
4.F.	Field Burning of Agricultural Residues																		
4.G.	Other																		
5. Land Use, Land-Use Change and Forestry (net)[5]																			
5.A.	Forest Land																		
5.B.	Cropland																		
5.C.	Grassland																		
5.D.	Wetlands																		
5.E.	Settlements																		
5.F.	Other Land																		
5.G.	Other																		

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 8 (a) RECALCULATION - RECALCULATED DATA
(Sheet 3 of 4) **Recalculated year:**

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2						CH_4						N_2O					
	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions excluding LULUCF [2]	Impact of recalculation on total emissions including LULUCF[3]
	CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)		
6. Waste																		
6.A. Solid Waste Disposal on Land																		
6.B. Waste-water Handling																		
6.C. Waste Incineration																		
6.D. Other																		
7. Other *(as specified in Summary 1.A)*																		
Memo Items:																		
International Bunkers																		
Multilateral Operations																		
CO_2 Emissions from Biomass																		

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 8 (a) RECALCULATION - RECALCULATED DATA
(Sheet 4 of 4) **Recalculated year:**

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs						PFCs						SF_6					
		Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions excluding LULUCF [(2)]	Impact of recalculation on total emissions including LULUCF[(3)]	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions excluding LULUCF [(2)]	Impact of recalculation on total emissions including LULUCF[(3)]	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions excluding LULUCF [(2)]	Impact of recalculation on total emissions including LULUCF[(3)]
		CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)			CO_2 equivalent (Gg)			(%)		
Total Actual Emissions																			
2.C.3.	Aluminium Production																		
2.E.	Production of Halocarbons and SF_6																		
2.F.	Consumption of Halocarbons and SF_6																		
2.G.	Other																		
Potential Emissions from Consumption of HFCs/PFCs and SF_6																			

	Previous submission	Latest submission	Difference	Difference[(1)]
	CO_2 equivalent (Gg)			(%)
Total CO_2 Equivalent Emissions with Land Use, Land-Use Change and Forestry				
Total CO_2 Equivalent Emissions without Land Use, Land-Use Change and Forestry				

[(1)] Estimate the percentage change due to recalculation with respect to the previous submission (percentage change = 100 x [(LS-PS)/PS], where LS = latest submission and PS = previous submission. All cases of recalculation of the estimate of the source/sink category should be addressed and explained in table 8(b).
[(2)] Total emissions refer to total aggregate GHG emissions expressed in terms of CO_2 equivalent, excluding GHGs from the LULUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = 100 x [(source (LS) - source (PS))/total emissions (LS)], where LS = latest submission, PS = previous submission.
[(3)] Total emissions refer to total aggregate GHG emissions expressed in terms of CO_2 equivalent, including GHGs from the LULUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = 100 x [(source (LS) - source (PS))/total emissions (LS)], where LS = latest submission, PS = previous submission.
[(4)] Parties which previously reported CO_2 from soils in the Agriculture sector should note this in the NIR.
[(5)] Net CO_2 emissions/removals to be reported.

Documentation box:
Parties should provide detailed information on recalculations in Chapter 10: Recalculations and Improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of Chapters 3 - 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 8 (b) RECALCULATION - EXPLANATORY INFORMATION
(Sheet 1 of 1)

Year
Submission
Country

Specify the sector and source/sink category[(1)] where changes in estimates have occurred:		GHG	RECALCULATION DUE TO				
			CHANGES IN:			Addition/removal/ reallocation of source/sink categories	Other changes in data (e.g. statistical or editorial changes, correction of errors)
			Methods [(2)]	Emission factors [(2)]	Activity data [(2)]		

[(1)] Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table. Note that the source categories entered in this table should match those used in table 8(a).
[(2)] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in table 8(a). Include changes in the assumptions and coefficients in the Methods column.

Documentation box:

Parties should provide the full information on recalculations in Chapter 10: Recalculations and Improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of Chapters 3 to 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table. References should point particularly to the sections of the NIR in which justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory are reported.

TABLE 9(a) COMPLETENESS - INFORMATION ON NOTATION KEYS
(Sheet 1 of 1)

Country
Year
Submission

Sources and sinks not estimated (NE)[1]				
GHG	**Sector[2]**	**Source/sink category[2]**	**Explanation**	
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

Sources and sinks reported elsewhere (IE)[3]				
GHG	**Source/sink category**	**Allocation as per IPCC Guidelines**	**Allocation used by the Party**	**Explanation**
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

[1] Clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for which the notation key NE (not estimated) is entered in the sectoral tables.

[2] Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: Waste, source category: Waste-Water Handling).

[3] Clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the notation key IE (included elsewhere) is used in the sectoral tables.

TABLE 9(b) COMPLETENESS - INFORMATION ON ADDITIONAL GREENHOUSE GASES
(Sheet 1 of 1)

Country
Year
Submission

Additional GHG emissions reported[1]						
GHG	**Source category**	**Emissions (Gg)**	**Estimated GWP value (100-year horizon)**	**Emissions CO_2 equivalent (Gg)**	**Reference to the source of GWP value**	**Explanation**

[1] Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

Documentation box:
Parties should provide detailed information regarding completeness of the inventory in the NIR (Chapter 1.8: General Assessment of the Completeness, and Annex 5). Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 10 EMISSION TRENDS Year
CO_2 Submission
(Sheet 1 of 5) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	(Gg)			%
1. Energy				
A. Fuel Combustion (Sectoral Approach)				
1. Energy Industries				
2. Manufacturing Industries and Construction				
3. Transport				
4. Other Sectors				
5. Other				
B. Fugitive Emissions from Fuels				
1. Solid Fuels				
2. Oil and Natural Gas				
2. Industrial Processes				
A. Mineral Products				
B. Chemical Industry				
C. Metal Production				
D. Other Production				
E. Production of Halocarbons and SF_6				
F. Consumption of Halocarbons and SF_6				
G. Other				
3. Solvent and Other Product Use				
4. Agriculture				
A. Enteric Fermentation				
B. Manure Management				
C. Rice Cultivation				
D. Agricultural Soils				
E. Prescribed Burning of Savannas				
F. Field Burning of Agricultural Residues				
G. Other				
5. Land Use, Land-Use Change and Forestry[2]				
A. Forest Land				
B. Cropland				
C. Grassland				
D. Wetlands				
E. Settlements				
F. Other Land				
G. Other				
6. Waste				
A. Solid Waste Disposal on Land				
B. Waste-water Handling				
C. Waste Incineration				
D. Other				
7. Other *(as specified in Summary 1.A)*				
Total CO_2 emissions including net CO_2 from LULUCF				
Total CO_2 emissions excluding net CO_2 from LULUCF				
Memo Items:				
International Bunkers				
Aviation				
Marine				
Multilateral Operations				
CO_2 Emissions from Biomass				

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS Year
CH_4 Submission
(Sheet 2 of 5) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	(Gg)			%
1. Energy				
A. Fuel Combustion (Sectoral Approach)				
1. Energy Industries				
2. Manufacturing Industries and Construction				
3. Transport				
4. Other Sectors				
5. Other				
B. Fugitive Emissions from Fuels				
1. Solid Fuels				
2. Oil and Natural Gas				
2. Industrial Processes				
A. Mineral Products				
B. Chemical Industry				
C. Metal Production				
D. Other Production				
E. Production of Halocarbons and SF_6				
F. Consumption of Halocarbons and SF_6				
G. Other				
3. Solvent and Other Product Use				
4. Agriculture				
A. Enteric Fermentation				
B. Manure Management				
C. Rice Cultivation				
D. Agricultural Soils				
E. Prescribed Burning of Savannas				
F. Field Burning of Agricultural Residues				
G. Other				
5. Land Use, Land-Use Change and Forestry				
A. Forest Land				
B. Cropland				
C. Grassland				
D. Wetlands				
E. Settlements				
F. Other Land				
G. Other				
6. Waste				
A. Solid Waste Disposal on Land				
B. Waste-water Handling				
C. Waste Incineration				
D. Other				
7. Other *(as specified in Summary 1.A)*				
Total CH_4 emissions including CH_4 from LULUCF				
Total CH_4 emissions excluding CH_4 from LULUCF				
Memo Items:				
International Bunkers				
Aviation				
Marine				
Multilateral Operations				
CO_2 Emissions from Biomass				

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
N_2O
(Sheet 3 of 5)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	(Gg)			%
1. Energy				
A. Fuel Combustion (Sectoral Approach)				
Energy Industries				
Manufacturing Industries and Construction				
Transport				
Other Sectors				
Other				
B. Fugitive Emissions from Fuels				
Solid Fuels				
Oil and Natural Gas				
2. Industrial Processes				
A. Mineral Products				
B. Chemical Industry				
C. Metal Production				
D. Other Production				
E. Production of Halocarbons and SF_6				
F. Consumption of Halocarbons and SF_6				
G. Other				
3. Solvent and Other Product Use				
4. Agriculture				
A. Enteric Fermentation				
B. Manure Management				
C. Rice Cultivation				
D. Agricultural Soils				
E. Prescribed Burning of Savannas				
F. Field Burning of Agricultural Residues				
G. Other				
5. Land Use, Land-Use Change and Forestry				
A. Forest Land				
B. Cropland				
C. Grassland				
D. Wetlands				
E. Settlements				
F. Other Land				
G. Other				
6. Waste				
A. Solid Waste Disposal on Land				
B. Waste-water Handling				
C. Waste Incineration				
D. Other				
7. Other ***(as specified in Summary 1.A)***				
Total N_2O emissions including N_2O from LULUCF				
Total N_2O emissions excluding N_2O from LULUCF				
Memo Items:				
International Bunkers				
Aviation				
Marine				
Multilateral Operations				
CO_2 Emissions from Biomass				

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
HFCs, PFCs and SF_6
(Sheet 4 of 5)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	(Gg)			%
Emissions of HFCs[3] - (Gg CO_2 equivalent)				
HFC-23				
HFC-32				
HFC-41				
HFC-43-10mee				
HFC-125				
HFC-134				
HFC-134a				
HFC-152a				
HFC-143				
HFC-143a				
HFC-227ea				
HFC-236fa				
HFC-245ca				
Unspecified mix of listed HFCs[4] - (Gg CO_2 equivalent)				
Emissions of PFCs[3] - (Gg CO_2 equivalent)				
CF_4				
C_2F_6				
C_3F_8				
C_4F_{10}				
c-C_4F_8				
C_5F_{12}				
C_6F_{14}				
Unspecified mix of listed PFCs[4] - (Gg CO_2 equivalent)				
Emissions of SF_6[3] - (Gg CO_2 equivalent)				
SF_6				

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS Year
SUMMARY Submission
(Sheet 5 of 5) Country

GREENHOUSE GAS EMISSIONS	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	CO_2 equivalent (Gg)			(%)
CO_2 emissions including net CO_2 from LULUCF				
CO_2 emissions excluding net CO_2 from LULUCF				
CH_4 emissions including CH_4 from LULUCF				
CH_4 emissions excluding CH_4 from LULUCF				
N_2O emissions including N_2O from LULUCF				
N_2O emissions excluding N_2O from LULUCF				
HFCs				
PFCs				
SF_6				
Total (including LULUCF)				
Total (excluding LULUCF)				

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	(Years 1991 to latest reported year)	Change from base to latest reported year
	CO_2 equivalent (Gg)			(%)
1. Energy				
2. Industrial Processes				
3. Solvent and Other Product Use				
4. Agriculture				
5. Land Use, Land-Use Change and Forestry[5]				
6. Waste				
7. Other				
Total (including LULUCF)[5]				

[1] The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the percentage change in the final column of this table.
[2] Fill in net emissions/removals as reported in table Summary 1.A. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
[3] Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Only in these rows are the emissions expressed as CO_2 equivalent emissions.
[4] In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO_2 equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.
[5] Includes net CO_2, CH_4 and N_2O from LULUCF.

Documentation box:
• Parties should provide detailed explanations on emissions trends in Chapter 2: Trends in Greenhouse Gas Emissions and, as appropriate, in the corresponding Chapters 3 - 9 of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.
• Use the documentation box to provide explanations if potential emissions are reported.

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