



联合国



气候变化框架公约

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临时议程项目 5(d)
方法问题
与温室气体清单有关的问题

《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
(纳入第 13/CP.9 号决定的规定后)

秘书处的说明

摘 要

本文件载有经订正后完整的“《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九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，以便利于附件一缔约方 2005 年进行清单报告工作。

^{*} 由于技术原因重新印发。

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导 言

A. 任 务

1. 缔约方会议在第 13/CP.9 号决定中完成了土地利用、土地利用的变化和林业类别的通用报告格式表，并决定在 2005 年提交清单时试用这些表格。

2. 缔约方会议在同一决定中请秘书处将土地利用、土地利用的变化和林业通用报告格式表以及相关的技术修订纳入第 18/CP.8 号决定所通过的“《公约》附件一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“《公约》年度清单报告指南”)。

3. 缔约方会议还请秘书处将这些表格纳入正在开发的新的报告软件(下称“通用报告格式软件”)，以便利于《公约》附件一列缔约方于 2005 年 4 月 15 日前提交清单。

B. 本说明的范围

4. 本文件载有经订正后完整的所有清单类别的《公约》年度清单报告指南，包括对土地利用、土地利用的变化和林业类别的修订。在编写本文件时，秘书处按照第 13/CP.9 号决定的要求及其附件一、二和三的具体规定，作出必要的修订，纳入了通用报告格式表、技术修订和其他变更。此外，指南的文本和表格也有一些文字上的修改，以确保各部分一致，并与第 18/CP.8 号决定通过的通用报告格式表一致。文字修改有：“源类别”改为“类别”，《公约》年度清单报告指南脚注 4 以此作了说明”；为与通用报告格式表的其他部分一致，土地利用、土地利用的变化和林业类别的通用报告格式表涂上阴影。如指南附件二第 11 段和第 12 段所述(见第 24 页)，阴影表示在通用报告格式表内缔约方填写数据或软件自动计算数据的地方。

5. 附属科学和技术咨询机构(科技咨询机构)第二十三届会议审议各缔约方关于通用报告格式表的意见和经验后，可能对指南的土地利用、土地利用的变化和林业部分加以进一步修订。根据第 18/CP.8 号决定，科技咨询机构将参照指南使用的经验，在第二十四届会议上考虑是否对《公约》年度清单报告指南进行修订，包括对土地利用、土地利用的变化和林业部分进行修订。

《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。如果对基准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。

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。

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。

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 准 年

8. 应将 1990 年定为估算和报告清单的基准年。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准年，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，确定其基准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准年和之后各年，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准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准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。

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。

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(CO₂)、甲烷(CH₄)、一氧化二氮(N₂O)、全氟碳化物(PFCs)、氢氟碳化物(HFCs)和六氟化硫(SF₆)。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 CO₂ 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 SF₆ 的实际排放量,按照化学品(如 HFC-134_a)和源类别以质量单位和 CO₂ 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

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 CO₂ 当量的排放量。

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 SF₆ 分配数量的基准年的，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准年，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。

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 CO₂ 捕获和随后 CO₂ 贮存的效应，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 CO₂、N₂O、CH₄、HFCs、PFCs 和 SF₆ 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。

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

⁷ 如国家清单报告中使用时这类标记符号，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”。

CO₂ 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、或增加自基准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

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。

和清除量的估计数，应报告这种重新计算，报告应涵盖基准年和其后各年，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

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。

信息以便能够对清单做出审评。这种信息应包含从基准年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。

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 CO₂ 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；

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准年。

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。

- (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进程的 CO、NMVOCs 及 CH₄ 排放量大气氧化相对应的 CO₂ 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 CO₂ 捕获及随后 CO₂ 贮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/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 CO₂ 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：

- (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准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；

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。

- (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。应从基准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. 系统更新指南

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 ₂ O | 310 |
| 氢氟碳化合物 (HFCs) | | |
| HFC-23 | CHF ₃ | 11,700 |
| HFC-32 | CH ₂ F ₂ | 650 |
| HFC-41 | CH ₃ F | 150 |
| HFC-43-10mee | C ₅ H ₂ F ₁₀ | 1,300 |
| HFC-125 | C ₂ HF ₅ | 2,800 |
| HFC-134 | C ₂ H ₂ F ₄ (CHF ₂ CHF ₂) | 1,000 |
| HFC-134a | C ₂ H ₂ F ₄ (CH ₂ FCF ₃) | 1,300 |
| HFC-152a | C ₂ H ₄ F ₂ (CH ₃ CHF ₂) | 140 |
| HFC-143 | C ₂ H ₃ F ₃ (CHF ₂ CH ₂ F) | 300 |
| HFC-143a | C ₂ H ₃ F ₃ (CF ₃ CH ₃) | 3,800 |
| HFC-227ea | C ₃ HF ₇ | 2,900 |
| HFC-236fa | C ₃ H ₂ F ₆ | 6,300 |
| HFC-245ca | C ₃ H ₃ F ₅ | 560 |
| 全氟化碳 | | |
| 全氟化甲烷 | CF ₄ | 6,500 |
| 全氟乙烷 | C ₂ F ₆ | 9,200 |
| 全氟丙烷 | C ₃ F ₈ | 7,000 |
| 全氟丁烷 | C ₄ F ₁₀ | 7,000 |
| 全氟环丁烷 | c-C ₄ F ₈ | 8,700 |
| 全氟戊烷 | C ₅ F ₁₂ | 7,500 |
| 全氟己烷 | C ₆ F 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)

第一章：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)

第二章：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 SO₂ 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 CO₂ 捕获及随后的 CO₂ 贮存
- 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.A3¹

附件 2：关于估算矿物燃料燃烧 CO₂ 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：CO₂ 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

¹ 增加此项，以便与本指南第 30 段的规定保持一致。

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: 其他附件一(其他有关信息—备选)

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

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。

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。

卤化碳和 SF₆ 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 SF₆ 生产中的 PFC_s 和 SF₆

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 SF₆ 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 SF₆ 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 SF₆ 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 FracGRAZ(放牧)一栏中按照牲畜种类提供分计值和在 FracBURN(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 CH_4 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 N₂O 数据，采用其它方法估算人类排泄物或废水处理产生的 N₂O 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

通用报告格式表¹

关于通用报告格式的说明

1. 通用报告格式是国家清单报告的组成部分。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，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(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，以及其他符合气专委指南和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。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，除非这只是用于计算隐含排放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 CO₂ 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。

¹ 载有《气候公约》年度清单报告指南的 FCCC/SBSTA/2002/L.5/Add.2 号文件第 23 至 27 页是关于通用报告格式表格的议定改动的说明文字。完整的表格已经在缔约方会议第八届会议之前作为 FCCC/WEB/SBSTA/2002/1 号文件单独发行。由于经修改后的完整的通用报告格式表格现已编入本文件(第 27 页起)，因此从这个最后文本中删去上述说明文字。

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 CO₂ 的排放量和清除量(碳的增加和减少)分别列出，但因所使用的方法而在技术不可能将增加和减少的信息分开的情况除外。

14. 如果缔约方没有在新的土地利用、土地利用的变化和林业通用报告格式表中提供所有年份的信息，也没有重新计算这些年土地利用、土地利用变化和林业的估计数，那么它应该说明如何将气专委《土地利用、土地利用的变化和林业良好做法指导意见》提供的类别与气专委 1996 年指南使用的土地利用变化和林业的类别(5.A 至 5.E)相对应，还应该说明如何重新计算林业和草原转成耕地产生的排放总量。国家清单报告中提供的信息应该与通用报告格式中的信息交叉引用。

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说 明:

为避免改动通用报告格式各种复杂表格的外观，这些表格一律不翻译。通用报告格式是一种标准格式，供附件一缔约方用来以电子方式报告温室气体排放量和清除量估计数以及任何其他有关信息。由于技术上的限制，本文件印出的通用报告格式的编排(例如，表格的尺寸和字体)无法使用统一标准。本文件所载的表格清单与电子版本通用报告格式各表顺序相同。

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

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ | CH ₄ | N ₂ O | 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 (<i>as specified in table 1.A(a) sheet 2</i>) | | | | | | | |
| 3. Transport | | | | | | | |
| a. Civil Aviation | | | | | | | |
| b. Road Transportation | | | | | | | |
| c. Railways | | | | | | | |
| d. Navigation | | | | | | | |
| e. Other Transportation (<i>as specified in table 1.A(a) sheet 3</i>) | | | | | | | |

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

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ | CH ₄ | N ₂ O | 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 | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | |

⁽¹⁾ Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO₂ 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 CO₂ 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 CO₂ 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 ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | (TJ) | NCV/GCV ⁽¹⁾ | (t/TJ) | (kg/TJ) | | | (Gg) | |
| I.A. Fuel Combustion | | | | | | | | |
| Liquid Fuels | | | | | | | | |
| Solid Fuels | | | | | | | | |
| Gaseous Fuels | | | | | | | | |
| Biomass | | | | | | (3) | | |
| Other Fuels | | | | | | | | |
| I.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 ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | (TJ) | NCV/GCV ⁽¹⁾ | (t/TJ) | (kg/TJ) | | | (Gg) | |
| I.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) | | | | | | | | |
| ⁽²⁾ | | | | | | | | |
| 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.

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

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 ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | (TJ) | NCV/GCV ⁽¹⁾ | (t/TJ) | (kg/TJ) | | (Gg) | | |
| I.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 (<i>please specify</i>) | | | | | | | | |
| | | | | | | | | |
| Gaseous Fuels | | | | | | | | |
| Biomass | | | | | | (3) | | |
| Other Fuels (<i>please specify</i>) | | | | | | | | |
| | | | | | | | | |
| c. Railways | | | | | | | | |
| Liquid Fuels | | | | | | | | |
| Solid Fuels | | | | | | | | |
| Gaseous Fuels | | | | | | | | |
| Other Fuels (<i>please specify</i>) | | | | | | | | |
| | | | | | | | | |
| d. Navigation | | | | | | | | |
| Residual Oil (Residual Fuel Oil) | | | | | | | | |
| Gas/Diesel Oil | | | | | | | | |
| Gasoline | | | | | | | | |
| Other Liquid Fuels (<i>please specify</i>) | | | | | | | | |
| | | | | | | | | |
| Solid Fuels | | | | | | | | |
| Gaseous Fuels | | | | | | | | |
| Other Fuels (<i>please specify</i>) | | | | | | | | |
| | | | | | | | | |
| e. Other Transportation (<i>please specify</i>) | | | | | | | | |
| (3) | | | | | | | | |
| 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 ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | (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 CH₄ and N₂O 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 CO₂ emissions from fuel combustion. The value for total CO₂ 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, solid, gaseous, biomass and other fuels).

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO₂ 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 CO₂ 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 CO₂ emissions from Fuel Combustion
(Sheet 1 of 1)

Country
Year
Submission

| FUEL TYPES | REFERENCE APPROACH | | | SECTORAL APPROACH ⁽¹⁾ | | DIFFERENCE ⁽²⁾ | |
|--|--|--|---------------------------|----------------------------------|---------------------------|---------------------------|---------------------------|
| | Apparent energy consumption ⁽³⁾ | Apparent energy consumption (excluding non-energy use and feedstocks) ⁽⁴⁾ | CO ₂ emissions | Energy consumption | CO ₂ emissions | Energy consumption | CO ₂ emissions |
| | (PJ) | (PJ) | (Gg) | (PJ) | (Gg) | (%) | (%) |
| 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 CO₂ emissions from fuel combustion as reported in table 1.A(a), sheets 1-4.

⁽²⁾ Difference in CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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 | | |
|--|-------------------------|--------------------------------|-----------------|---------------------------------|--------------------------|-----------------|
| | Amount of fuel produced | CH ₄ ⁽¹⁾ | CO ₂ | CH ₄ | | CO ₂ |
| | | | | Recovery/Flaring ⁽²⁾ | Emissions ⁽³⁾ | |
| | | (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 <i>(please specify)</i> ⁽⁵⁾ | | | | | | |
| | | | | | | |

⁽¹⁾ The IEFs for CH₄ are estimated on the basis of gross emissions as follows: (CH₄ emissions + amounts of CH₄ flared/recovered) / activity data.

⁽²⁾ Amounts of CH₄ drained (recovered), utilized or flared.

⁽³⁾ Final CH₄ emissions after subtracting the amounts of CH₄ 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 CH₄ 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.

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 ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | | | | | (kg/unit) ⁽²⁾ | | | (Gg) | |
| 1. B. 2. a. Oil ⁽⁵⁾ | | | | | | | | | |
| 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, 10⁶ m³, 10⁶ 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 CO₂ 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 (TJ) | CO ₂ | CH ₄ | N ₂ O | CO ₂ | CH ₄ | N ₂ O |
| | | (t/TJ) | | | (Gg) | | |
| Aviation Bunkers | | | | | | | |
| Jet Kerosene | | | | | | | |
| Gasoline | | | | | | | |
| Marine Bunkers | | | | | | | |
| Gasoline | | | | | | | |
| Gas/Diesel Oil | | | | | | | |
| Residual Fuel Oil | | | | | | | |
| Lubricants | | | | | | | |
| Coal | | | | | | | |
| Other <i>(please specify)</i> | | | | | | | |
| | | | | | | | |
| 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 ₂ O | 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 CO₂ 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 ₂ O | 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 SF₆ | | | | | | | | | | | | | |
| 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 SF₆ | | | | | | | | | | | | | |
| 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 CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

⁽²⁾ CO₂ from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO₂ 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 CO₂, CH₄ and N₂O
(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 ₂ O | CO ₂ | | CH ₄ | | N ₂ O | |
| | | | | | | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ |
| | Description ⁽¹⁾ | (kt) | (t/t) | | | (Gg) | | | | | |
| A. Mineral Products | | | | | | | | | | | |
| 1. Cement Production | <i>(e.g. cement or clinker production)</i> | | | | | | | | | | |
| 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 <i>(please specify)</i> | | | | | | | | | | | |
| 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 <i>(please specify)</i> | | | | | | | | | | | |
| 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 CO₂, CH₄ and N₂O
(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 ₂ O | CO ₂ | | CH ₄ | | N ₂ O | |
| | Description ⁽¹⁾ | (kt) | (t/t) | | | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ |
| | | | | | | (Gg) | | | | | |
| C. Metal Production | | | | | | | | | | | |
| 1. Iron and Steel Production | | | | | | | | | | | |
| Steel | | | | | | | | | | | |
| Pig Iron | | | | | | | | | | | |
| Sinter | | | | | | | | | | | |
| Coke | | | | | | | | | | | |
| Other (<i>please specify</i>) | | | | | | | | | | | |
| | | | | | | | | | | | |
| 2. Ferroalloys Production | | | | | | | | | | | |
| 3. Aluminium Production | | | | | | | | | | | |
| 4. SF ₆ Used in Aluminium and Magnesium Foundries | | | | | | | | | | | |
| 5. Other (<i>please specify</i>) | | | | | | | | | | | |
| | | | | | | | | | | | |
| D. Other Production | | | | | | | | | | | |
| 1. Pulp and Paper | | | | | | | | | | | |
| 2. Food and Drink | | | | | | | | | | | |
| G. Other (<i>please specify</i>) | | | | | | | | | | | |
| | | | | | | | | | | | |

- ⁽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 SF₆
(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 ₂ F ₆ | C ₃ F ₈ | C ₄ F ₁₀ | c-C ₄ F ₈ | C ₅ F ₁₂ | C ₆ F 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:

- All footnotes for this table are given at the end of the table on sheet 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 SF₆
(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-245ea | Unspecified mix of listed HFCs ⁽¹⁾ | Total HFCs | CF ₄ | C ₂ F ₆ | C ₃ F ₈ | C ₄ F ₁₀ | c-C ₄ F ₈ | C ₅ F ₁₂ | C ₆ F 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 | 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 CO₂ 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 SF₆ 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 SF₆ 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 SF₆ 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 SF₆, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO₂ 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 SF₆
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA | | IMPLIED EMISSION FACTORS ⁽²⁾ | | | EMISSIONS | | | | | |
|---|-------------------------------|-----|---|--|--|--------------------------|-------------------------|-------------------------------|-------------------------|--------------------------|-------------------------|
| | | | | | | CF ₄ | | C ₂ F ₆ | | SF ₆ | |
| | Description ⁽¹⁾ | (t) | (kg/t) | | | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ |
| C. PFCs and SF₆ 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 | |
| | Description ⁽¹⁾ | (t) | HFC-23 | SF ₆ | HFCs/PFCs (as specified) | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | Emissions ⁽³⁾ | Recovery ⁽⁴⁾ | (specify chemical) | Recovery ⁽⁴⁾ |
| E. Production of Halocarbons and SF₆ | | | | | | | | | | | |
| 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: |
| <ul style="list-style-type: none"> 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 SF₆
 (Sheet 1 of 2)

Country
 Year
 Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA | | | IMPLIED EMISSION FACTORS | | | EMISSIONS | | |
|--|---|--|--|------------------------------------|------------------------|-------------------------|-----------------------|-------------|---------------|
| | Amount of fluid | | | Product manufacturing factor | Product life factor | Disposal loss factor | From manufacturing | From stocks | From disposal |
| | Filled into new manufactured products | In operating systems (average annual stocks) | Remaining in products at decommissioning | | | | | | |
| | (t) | | | | | | (% per annum) | | |
| 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 SF₆ 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 SF₆
(Sheet 2 of 2)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA <i>Amount of fluid</i> | | | 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 <i>(please specify chemical)</i> ⁽¹⁾ | | | | | | | | | |
| | | | | | | | | | |
| 4. Aerosols ⁽¹⁾ | | | | | | | | | |
| Metered Dose Inhalers | | | | | | | | | |
| | | | | | | | | | |
| Other | | | | | | | | | |
| | | | | | | | | | |
| 5. Solvents ⁽¹⁾ | | | | | | | | | |
| | | | | | | | | | |
| 6. Other applications using ODS ⁽²⁾ <i>substitutes</i> ⁽¹⁾ | | | | | | | | | |
| | | | | | | | | | |
| 7. Semiconductors ⁽¹⁾ | | | | | | | | | |
| | | | | | | | | | |
| 8. Electric Equipment ⁽¹⁾ | | | | | | | | | |
| | | | | | | | | | |
| 9. Other <i>(please specify)</i> ⁽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 ₂ O | 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 ₂ O for Anaesthesia | | | |
| 2. N ₂ O from Fire Extinguishers | | | |
| 3. N ₂ O from Aerosol Cans | | | |
| 4. Other Use of N ₂ O | | | |
| 5. Other (<i>as specified in table 3.A-D</i>) | | | |

Note: The quantity of carbon released in the form of NMVOCs should be accounted for in both the NMVOC and the CO₂ columns. The quantities of NMVOCs should be converted into CO₂ equivalent emissions before being added to the CO₂ amounts in the CO₂ 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 N₂O 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 ₂ O (t/t) |
| A. Paint Application | | | | |
| B. Degreasing and Dry Cleaning | | | | |
| C. Chemical Products, Manufacture and Processing | | | | |
| D. Other | | | | |
| 1. Use of N ₂ O for Anaesthesia | | | | |
| 2. N ₂ O from Fire Extinguishers | | | | |
| 3. N ₂ O from Aerosol Cans | | | | |
| 4. Other Use of N ₂ O | | | | |
| 5. Other (<i>please specify</i>) ⁽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 ₂ O | NO _x (Gg) | CO | NMVOC |
|--|-----------------|------------------|-------------------------|----|-------|
| 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 ₂ O | 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 CO₂ 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 CO₂ estimates.

⁽³⁾ Direct N₂O emissions from pasture, range and paddock manure are to be reported in the "4.D Agricultural Soils" category. All other N₂O 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 CH₄ emissions and CH₄ and N₂O removals from agricultural soils, or CO₂ 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

Additional information (only for those livestock types for which Tier 2 was used)^(a)

| 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) | | | | |
| | | | | |

| Disaggregated list of animals ^(b) | | Dairy Cattle | Non-Dairy Cattle | Other (specify) | |
|--|----------|--------------|------------------|-----------------|--|
| Indicators: | | | | | |
| 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 CH₄ emissions from enteric fermentation, CH₄ and N₂O from manure management, N₂O direct emissions from soil and N₂O 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 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
CH₄ 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⁾ CH ₄ (kg CH ₄ /head/yr) |
|---|---|--|-----------|------|--|---|---|
| | 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⁾ (m ³ CH ₄ /kg VS) |
| | | 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 (<i>please specify</i>) | | | | | | | |

⁽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 IPCC 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 | 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 (<i>please specify</i>) | 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
N₂O 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 (1000s) | Nitrogen excretion (kg N/head/yr) | Nitrogen excretion per animal waste management system (AWMS) (kg N/yr) | | | | | | Emission factor per animal waste management system | |
| | | | Anaerobic lagoon | Liquid system | Daily spread | Solid storage and dry lot | Pasture range and paddock | Other | (kg N ₂ O-N/kg N) | |
| Cattle | | | | | | | | | Anaerobic lagoon | |
| <i>Option A:</i> | | | | | | | | | Liquid system | |
| Dairy Cattle | | | | | | | | | Solid storage and dry lot | |
| Non-Dairy Cattle | | | | | | | | | Other AWMS | |
| <i>Option B:</i> | | | | | | | | | | |
| Mature Dairy Cattle | | | | | | | | | | |
| Mature Non-Dairy Cattle | | | | | | | | | | |
| Young Cattle | | | | | | | | | | |
| Sheep | | | | | | | | | | |
| Swine | | | | | | | | | | |
| Poultry | | | | | | | | | | |
| Other livestock (<i>please specify</i>) | | | | | | | | | | |
| | | | | | | | | | | |
| Total per AWMS | | | | | | | | | | |

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

| |
|--|
| Documentation box: <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> (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⁾ CH ₄ (g/m ²) | EMISSIONS CH ₄ (Gg) | |
|---|-------------------|---|------|--|--|---|
| | | | | | | Harvested area ⁽²⁾ (10 ⁹ m ² /yr) |
| | | | type | | | |
| 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 (<i>please specify</i>) | | | | | | |
| | | | | | | |

| | | | | | |
|--|----------------------------|--|--|--|--|
| | 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 kg N ₂ O-N/kg N ⁽²⁾ | EMISSIONS N ₂ O (Gg) |
|---|--|----------------------|--|---|
| | Description | Value kg N/yr | | |
| 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 (<i>please specify</i>) | | | | |
| | | | | |
| 2. Pasture, Range and Paddock Manure | N excretion on pasture range and paddock | | | |
| 3. Indirect Emissions | | | | |
| 1. Atmospheric Deposition | Volatilized 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 (<i>please specify</i>) | | | | |
| | | | | |

⁽¹⁾ To convert from N₂O-N to N₂O emissions, multiply by 44/28. Note that for cultivation of Histosols the unit of the IEF is kg N₂O-N/ha.

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:
 - Background information on CH₄ emissions from agricultural soils, if accounted for under the Agriculture sector;
 - Disaggregated values for Frac_{GRAZ} according to animal type, and for Frac_{BURN} according to crop types;
 - Full list of assumptions and fractions used.

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 NO _x | |
| Frac _{GASM} | Fraction of livestock N excretion that volatilizes as NH ₃ and NO _x | |
| 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 (<i>please specify</i>) | | |
| | | |

^(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).

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed Burning of Savannas
 (Sheet 1 of 1)

Country
 Year
 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 | N ₂ O | CH ₄ | N ₂ O |
| | | | | | | (kg/t dm) | | (Gg) | |
| <i>(specify ecological zone)</i> | | | | | | | | | |
| | | | | | | | | | |

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 | N ₂ O | CH ₄ | N ₂ O |
| | | | | | | | | | (kg/t dm) | | (Gg) | |
| 1. Cereals | | | | | | | | | | | | |
| Wheat | | | | | | | | | | | | |
| Barley | | | | | | | | | | | | |
| Maize | | | | | | | | | | | | |
| Oats | | | | | | | | | | | | |
| Rye | | | | | | | | | | | | |
| Rice | | | | | | | | | | | | |
| Other (<i>please specify</i>) | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 2. Pulses | | | | | | | | | | | | |
| Dry bean | | | | | | | | | | | | |
| Peas | | | | | | | | | | | | |
| Soybeans | | | | | | | | | | | | |
| Other (<i>please specify</i>) | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 3. Tubers and Roots | | | | | | | | | | | | |
| Potatoes | | | | | | | | | | | | |
| Other (<i>please specify</i>) | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 4. Sugar Cane | | | | | | | | | | | | |
| 5. Other (<i>please specify</i>) | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Net CO ₂ emissions/ removals ^{(1), (2)} | CH ₄ | N ₂ O | NO _x | CO |
|--|---|-----------------|------------------|-----------------|----|
| | (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⁽³⁾ | | | | | |
| 1. Wetlands remaining Wetlands | | | | | |
| 2. Land converted to Wetlands | | | | | |
| E. Settlements⁽³⁾ | | | | | |
| 1. Settlements remaining Settlements | | | | | |
| 2. Land converted to Settlements | | | | | |
| F. Other Land⁽⁴⁾ | | | | | |
| 1. Other Land remaining Other Land | | | | | |
| 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 (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and by changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+).

⁽²⁾ CO₂ emissions from liming and biomass burning are included in this column.

⁽³⁾ Parties do not have to prepare estimates for 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 and report in this row.

⁽⁴⁾ Parties do not have to prepare estimates for this category contained in Chapter 3.7 of the IPCC good practice guidance for LULUCF, although they may do so if they wish and report in this row. This land-use category is to allow the total of identified land area to match the national area.

⁽⁵⁾ May include other non-specified sources and sinks.

⁽⁶⁾ Parties do not have 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.

Note: The totals for N₂O (5.A and 5.D), CO₂ (5.B and 5.C) and CO₂, CH₄, N₂O (5.E and 5.F) may not equal the summation of the subcategories included in this table, because these totals include data from tables 5(II), 5(IV) and 5(V), where the subcategories are not available. Emissions of CO₂, CH₄, N₂O from 5.G Other are estimated based on the information provided in the background data tables.

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)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|---|----------------------------|------------------|--|----------|------------|--|--|--|----------|------------|---|---|
| Land-Use Category | Subdivision ⁽¹⁾ | Total area (kha) | Carbon stock change in living biomass per area ^{(2), (3)} | | | Net carbon stock change in dead organic matter per area ⁽³⁾ | Net carbon stock change in soils per area ⁽³⁾ | Carbon stock change in living biomass ^{(2),(3)} | | | Net carbon stock change in dead organic matter ⁽³⁾ | Net carbon stock change in soils ⁽³⁾ |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | |
| | | | (Mg C/ha) | | | | | (Gg C) | | | | |
| A. Total Forest Land | | | | | | | | | | | | |
| 1. Forest Land remaining Forest Land | | | | | | | | | | | | |
| 2. Land converted to Forest Land ⁽⁴⁾ | | | | | | | | | | | | |
| 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⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽³⁾ The signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽⁴⁾ 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)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|--|----------------------------|------------------|--|----------|------------|--|--|--|----------|------------|--|---|
| Land-Use Category | Subdivision ⁽¹⁾ | Total area (kha) | Carbon stock change in living biomass per area ^{(2), (3)} | | | Net carbon stock change in dead organic matter per area ⁽³⁾ | Net carbon stock change in soils per area ⁽³⁾ | Carbon stock change in living biomass ^{(2), (3), (4)} | | | Net carbon stock change in dead organic matter ^{(3), (5)} | Net carbon stock change in soils ⁽³⁾ |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | |
| | | | (Mg C/ha) | | | | | (Gg C) | | | | |
| B. Total Cropland | | | | | | | | | | | | |
| 1. Cropland remaining Cropland | | | | | | | | | | | | |
| 2. Land converted to Cropland ⁽⁶⁾ | | | | | | | | | | | | |
| 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⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽³⁾ The signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽⁴⁾ For category 5.B.1 Cropland remaining Cropland this column includes only changes in perennial woody biomass.

⁽⁵⁾ No reporting on dead organic matter pools is required for category 5.B.1. Cropland remaining Cropland.

⁽⁶⁾ 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 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)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|---|----------------------------|------------------|--|--------------------------|------------|--|--|--|--------------------|------------|--|---|--|
| Land-Use Category | Subdivision ⁽¹⁾ | Total area (kha) | Carbon stock change in living biomass per area ^{(2), (3)} | | | Net carbon stock change in dead organic matter per area ⁽²⁾ | Net carbon stock change in soils per area ⁽²⁾ | Carbon stock change in living biomass ^{(2), (3), (4)} | | | Net carbon stock change in dead organic matter ^{(2), (5)} | Net carbon stock change in soils ⁽²⁾ | |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | | |
| | | (Mg C/ha) | | | | | | | (Gg C) | | | | |
| C. Total Grassland | | | | | | | | | | | | | |
| 1. Grassland remaining Grassland | | | | | | | | | | | | | |
| 2. Land converted to Grassland ⁽⁶⁾ | | | | | | | | | | | | | |
| 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 signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽³⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽⁴⁾ For category 5.C.1 Grassland remaining Grassland this column includes only changes in perennial woody biomass.

⁽⁵⁾ No reporting on dead organic matter pools is required for category 5.C.1 Grassland remaining Grassland.

⁽⁶⁾ 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 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⁽¹⁾
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|--|----------------------------|------------------|--|--------------------------|------------|--|--|---|--------------------|------------|---|---|--|
| Land-Use Category | Subdivision ⁽²⁾ | Total area (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⁾ | |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | | |
| | | | (Mg C/ha) | | | | | (Gg C) | | | | | |
| D. Total Wetlands | | | | | | | | | | | | | |
| 1. Wetlands remaining Wetlands | | | | | | | | | | | | | |
| 2. Land converted to Wetlands ⁽⁵⁾ | | | | | | | | | | | | | |
| 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⁾ Parties do not have to prepare estimates for 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.

⁽²⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽³⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽⁴⁾ The signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽⁵⁾ 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 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.E SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Settlements⁽¹⁾
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|---|----------------------------|------------------|--|----------|------------|--|--|---|----------|------------|---|---|
| Land-Use Category | Subdivision ⁽²⁾ | Total area (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⁾ |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | |
| | | | (Mg C/ha) | | | | | (Gg C) | | | | |
| E. Total Settlements | | | | | | | | | | | | |
| 1. Settlements remaining Settlements | | | | | | | | | | | | |
| 2. Land converted to Settlements ⁽⁶⁾ | | | | | | | | | | | | |
| 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⁾ Parties do not have to prepare estimates for 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.

⁽²⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽³⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽⁴⁾ The signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽⁵⁾ For category 5.E.1 Settlements remaining Settlements this column includes only changes in perennial woody biomass.

⁽⁶⁾ 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 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⁽¹⁾
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | | | | | EMISSIONS/REMOVALS | | | | |
|--|----------------------------|------------------|--|----------|------------|--|--|---|----------|------------|---|---|
| Land-Use Category | Subdivision ⁽²⁾ | Total area (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⁾ |
| | | | Increase | Decrease | Net change | | | Increase | Decrease | Net change | | |
| | | | (Mg C/ha) | | | | | (Gg C) | | | | |
| F. Total Other Land | | | | | | | | | | | | |
| 1. Other Land remaining Other Land | | | | | | | | | | | | |
| 2. Land converted to Other Land ⁽⁵⁾ | | | | | | | | | | | | |
| 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⁾ Parties do not have to prepare estimates for this category contained in Chapter 3.7 of the IPCC good practice guidance for LULUCF, although they may do so if they wish. This land-use category is to allow the total of identified land area to match the national area.

⁽²⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽³⁾ CO₂ emissions and removals (carbon stock increase and decrease) should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on increases and decreases.

⁽⁴⁾ The signs for estimates of increases in carbon stocks are positive (+) and of decreases in carbon stocks are negative (-).

⁽⁵⁾ 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 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
Direct N₂O emissions from N fertilization⁽¹⁾
(Sheet 1 of 1)

Country
Year
Submission

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

⁽¹⁾ Direct N₂O 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 amount of fertilizer applied to forest land. The indirect N₂O emissions from forest land are estimated as part of the total indirect emissions (Agriculture sector and Forest Land) in the Agriculture sector based on the total fertilizers used in the country.

⁽²⁾ N₂O 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, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

⁽⁴⁾ If a Party is not able to separate the fertilizer applied to forest land from that applied to agriculture, it may report all N₂O emissions from fertilization in the Agriculture sector. This should be explicitly indicated in the documentation box.

⁽⁵⁾ A Party may report aggregate estimates for all N fertilization on forest land when data are not available to report forest land remaining forest land and land conversion 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
N₂O emissions from drainage of soils⁽¹⁾
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | | ACTIVITY DATA | IMPLIED EMISSION FACTORS | EMISSIONS |
|---|----------------------------|-----------------------|--|------------------|
| Land-Use Category ⁽²⁾ | Subdivision ⁽³⁾ | Area of drained soils | N ₂ O-N per area drained ⁽⁴⁾ | N ₂ O |
| | | (kha) | (kg N ₂ O-N/ha) | (Gg) |
| Total all Land-Use Categories | | | | |
| A. Forest Land | | | | |
| Organic Soil | | | | |
| | | | | |
| Mineral Soil | | | | |
| | | | | |
| D. Wetlands | | | | |
| Organic Soil | | | | |
| | | | | |
| Mineral Soil | | | | |
| | | | | |
| G. Other (please specify) | | | | |
| | | | | |

⁽¹⁾ Methodologies for estimating N₂O emissions from drainage of soils are not addressed in the Revised 1996 IPCC Guidelines, but are addressed for forest soils in Appendix 3a.2 of the IPCC good practice guidance for LULUCF (equation 3a.2.1) and for wetland soils in appendix 3a.3.

⁽²⁾ N₂O 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, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

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.

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| |
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TABLE 5 (III) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY
N₂O emissions from disturbance associated with land-use conversion to cropland⁽¹⁾
 (Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA | IMPLIED EMISSION FACTORS | EMISSIONS |
|--|---------------------|--|------------------|
| Land-Use Category ⁽²⁾ | Land area converted | N ₂ O-N emissions per area converted ⁽³⁾ | N ₂ O |
| | (kha) | (kg N ₂ O-N/ha) | (Gg) |
| Total all Land-Use Categories⁽⁴⁾ | | | |
| B. Cropland | | | |
| 2. Lands converted to Cropland ⁽⁵⁾ | | | |
| 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 ⁽⁶⁾ | | | |
| Organic Soils | | | |
| Mineral Soils | | | |
| 2.5 Other Land converted to Cropland | | | |
| Organic Soils | | | |
| Mineral Soils | | | |
| G. Other (please specify) | | | |
| | | | |

⁽¹⁾ Methodologies for N₂O 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. N₂O 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, N₂O emissions from disturbance of soils are only relevant for land conversions to cropland. N₂O 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, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

⁽⁴⁾ Parties can separate between organic and mineral soils, if data are available.

⁽⁵⁾ If activity data cannot be disaggregated to all initial land uses, Parties may report some initial land uses aggregated under other lands converted to cropland (indicate in the documentation box what this category includes).

⁽⁶⁾ Parties should avoid double counting with N₂O 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
Carbon emissions from agricultural lime application⁽¹⁾
 (Sheet 1 of 1)

Country
 Year
 Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA | IMPLIED EMISSION FACTORS | EMISSIONS |
|---|------------------------------|-----------------------------------|-----------|
| Land-Use Category | Total amount of lime applied | Carbon emissions per unit of lime | Carbon |
| | (Mg/yr) | (Mg C/Mg) | (Gg) |
| Total all Land-Use Categories ^{(2), (3), (4)} | | | |
| B. Cropland ⁽⁴⁾ | | | |
| Limestone CaCO ₃ | | | |
| Dolomite CaMg(CO ₃) ₂ | | | |
| | | | |
| C. Grassland ⁽⁴⁾ | | | |
| Limestone CaCO ₃ | | | |
| Dolomite CaMg(CO ₃) ₂ | | | |
| | | | |
| G. Other (please specify) ^{(4), (5)} | | | |
| Limestone CaCO ₃ | | | |
| Dolomite CaMg(CO ₃) ₂ | | | |
| | | | |

- ⁽¹⁾ Carbon emissions from agricultural lime application are addressed in equation 3.3.6 and 3.4.11 of the IPCC good practice guidance for LULUCF.
- ⁽²⁾ 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 total.
- ⁽³⁾ 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.
- ⁽⁴⁾ A Party may report aggregate estimates for total lime applications when data are not available for limestone and dolomite.
- ⁽⁵⁾ If a Party has data broken down to limestone and dolomite at the 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)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA | | | IMPLIED EMISSION FACTOR | | | EMISSIONS | | |
|---|----------------------------|-----------------------|--------|-------------------------|-----------------|------------------|--------------------------------|-----------------|------------------|
| | Description ⁽³⁾ | Unit (ha or kg dm) | Values | CO ₂ | CH ₄ | N ₂ O | CO ₂ ⁽⁴⁾ | CH ₄ | N ₂ O |
| Land-Use Category ⁽²⁾ | | | | (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 ⁽⁵⁾ | | | | | | | | | |
| 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 ⁽⁶⁾ | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| 2. Land converted to Grassland | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| 2.1 Forest Land converted to Grassland | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| D. Wetlands⁽⁷⁾ | | | | | | | | | |
| 1. Wetlands remaining Wetlands | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| 2. Land converted to Wetlands | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| 2.1 Forest Land converted to Wetlands | | | | | | | | | |
| Controlled Burning | | | | | | | | | |
| Wildfires | | | | | | | | | |
| E. Settlements⁽⁷⁾ | | | | | | | | | |
| F. Other Land⁽⁸⁾ | | | | | | | | | |
| 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 CO₂ 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⁾ Biomass burning on cropland remaining cropland is reported in the Agriculture sector.

⁽⁶⁾ Only includes emissions from controlled biomass burning on grasslands outside the tropics (prescribed savanna burning is reported under the Agriculture sector).

⁽⁷⁾ Parties do not have to prepare estimates for 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.

⁽⁸⁾ Parties do not have to prepare estimates for this category contained in Chapter 3.7 of the IPCC good practice guidance for LULUCF, although they may do so if they wish. 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 ₂ O | NO _x | CO | NMVOC | SO ₂ |
|---|--------------------------------|-----------------|------------------|-----------------|----|-------|-----------------|
| | (Gg) | | | | | | |
| Total Waste | | | | | | | |
| A. Solid Waste Disposal on Land | | | | | | | |
| 1. Managed Waste Disposal on Land | | | | | | | |
| 2. Unmanaged Waste Disposal Sites | | | | | | | |
| 3. Other (as specified in table 6.A) | | | | | | | |
| B. Waste-Water Handling | | | | | | | |
| 1. Industrial Waste Water | | | | | | | |
| 2. Domestic and Commercial Waste Water | | | | | | | |
| 3. Other (as specified in table 6.B) | | | | | | | |
| C. Waste Incineration | | | | | | | |
| D. Other (please specify) | | | | | | | |
| | | | | | | | |

⁽¹⁾ CO₂ 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 <i>(please specify)</i> | | | | | | | | |
| | | | | | | | | |

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 CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered)/annual MSW at the SWDS.

⁽²⁾ Actual emissions (after recovery).

⁽³⁾ CH₄ recovered and flared or utilized.

⁽⁴⁾ Under Solid Waste Disposal, CO₂ emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO₂ emissions from non-biogenic wastes are included in the total emissions, whereas the CO₂ emissions from biogenic wastes are not included in the total emissions.

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE

Waste Incineration
(Sheet 1 of 1)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | ACTIVITY DATA Amount of incinerated wastes (Gg) | IMPLIED EMISSION FACTOR | | | EMISSIONS | | |
|---|---|-------------------------|-----------------|------------------|--------------------------------|-----------------|------------------|
| | | CO ₂ | CH ₄ | N ₂ O | CO ₂ ⁽¹⁾ | CH ₄ | N ₂ O |
| | | (kg/t waste) | | | (Gg) | | |
| Waste Incineration | | | | | | | |
| a. Biogenic ⁽¹⁾ | | | | | | | |
| b. Other (non-biogenic - <i>please specify</i>) ^{(1),(2)} | | | | | | | |
| | | | | | | | |

⁽¹⁾ Under Solid Waste Disposal, CO₂ emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO₂ emissions from non-biogenic wastes are included in the total emissions, while the CO₂ 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 | | |
|---|--|--|--|--------------------------------|---------------------------------|--------------------------|-------------------------|---------------------------------|
| | Total organic product | | | CH ₄ ⁽²⁾ | N ₂ O ⁽³⁾ | CH ₄ | | N ₂ O ⁽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 (<i>please specify</i>) | | | | | | | | |
| ⁽⁶⁾ | | | | | | | | |
| a. Waste Water | | | | | | | | |
| b. Sludge | | | | | | | | |
| ⁽⁶⁾ | | | | | | | | |

| Additional information | | Domestic | Industrial |
|--------------------------------------|--|----------|------------|
| Total waste water (m ³): | | | |
| Treated waste water (%): | | | |

| Waste-water streams: | Waste-water output (m ³) | DC (kgCOD/m ³) |
|---------------------------------|--------------------------------------|----------------------------|
| Industrial waste water | | |
| Iron and steel | | |
| Non-ferrous | | |
| Fertilizers | | |
| Food and beverage | | |
| Paper and pulp | | |
| Organic chemicals | | |
| Other (<i>please specify</i>) | | |
| | | |
| | | |

| 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 ₂ O (kg N ₂ O-N/kg sewage N produced) | | N ₂ O (Gg) | |
| N ₂ O from human sewage ⁽³⁾ | | | | | | | |

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 ₂ O | 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⁾ | | | | | | | | | | | | | |
| | 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 SF ₆ | | | | | | | | | | | | | | |
| F. Consumption of Halocarbons and SF ₆ | | | | | | | | | | | | | | |
| 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 ₂ O | HFCs ⁽¹⁾ | | PFCs ⁽¹⁾ | | SF ₆ | | NO _x | CO | NMVOC | SO ₂ |
|---|---|-----------------|------------------|---------------------|---|---------------------|---------------------------------|-----------------|---|-----------------|----|-------|-----------------|
| | | | | P | A | P | A | P | A | | | | |
| | | | | (Gg) | | | CO ₂ equivalent (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 ₂ O | 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 | | | | | | | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | | | | | | | |

- ⁽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 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 CO₂ 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⁾ CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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 | CH ₄ | N ₂ O | HFCs ⁽¹⁾ | | PFCs ⁽¹⁾ | | SF ₆ | | NO _x | CO | NMVOC | SO ₂ |
|---|-----------------------------------|---------------------|-----------------|------------------|---------------------|---------------------------------|---------------------|---|-----------------|------|-----------------|----|-------|-----------------|
| | | emissions/ removals | | | 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⁾ | | | | | | | | | | | | | |
| | 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 CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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 CO₂ EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ ⁽¹⁾ | CH ₄ | N ₂ O | HFCs ⁽²⁾ | PFCs ⁽²⁾ | SF ₆ ⁽²⁾ | Total |
|--|----------------------------------|-----------------|------------------|---------------------|---------------------|--------------------------------|-------|
| | CO ₂ equivalent (Gg) | | | | | | |
| Total (Net Emissions)⁽⁴⁾ | | | | | | | |
| 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 | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | |
| | | | | | | | |
| Total CO ₂ Equivalent Emissions without Land Use, Land-Use Change and Forestry ⁽⁵⁾ | | | | | | | |
| Total CO ₂ Equivalent Emissions with Land Use, Land-Use Change and Forestry ⁽⁵⁾ | | | | | | | |

⁽¹⁾ For CO₂ 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 CO₂ from soils in the Agriculture sector should note this in the NIR.

⁽⁴⁾ See footnote 8 to table Summary 1.A.

⁽⁵⁾ These totals will differ from the totals reported in table 10, sheet 5 if Parties report non-CO₂ emissions from LULUCF.

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

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 ₂ O | | 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)

RA (Reference Approach)

T1 (IPCC Tier 1)

T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively)

T2 (IPCC Tier 2)

T3 (IPCC Tier 3)

CR (CORINAIR)

CS (Country Specific)

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)

CR (CORINAIR)

CS (Country Specific)

PS (Plant Specific)

OTH (Other)

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 ₂ O | | 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. Waste-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)

RA (Reference Approach)

T1 (IPCC Tier 1)

T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively)

T2 (IPCC Tier 2)

T3 (IPCC Tier 3)

CR (CORINAIR)

CS (Country Specific)

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)

CR (CORINAIR)

CS (Country Specific)

PS (Plant Specific)

OTH (Other)

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 ⁽¹⁾ |
|--|-----------------------|---|---|---|--|--|-------------------------|
| | | L | T | Q | | | |
| Specify key categories according to the national level of disaggregation used: | | | | | | | |
| <i>For example: 4.B Manure management</i> | <i>CH₄</i> | <i>X</i> | | | <i>X</i> | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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 2) Recalculated year:

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ | | | | | CH ₄ | | | | | N ₂ O | | | | |
|--|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|
| | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ |
| | CO ₂ equivalent (Gg) | | (%) | | (%) | CO ₂ equivalent (Gg) | | (%) | | (%) | CO ₂ equivalent (Gg) | | (%) | | (%) |
| Total National Emissions and Removals | | | | | | | | | | | | | | | |
| 1. Energy | | | | | | | | | | | | | | | |
| A. Fuel Combustion Activities | | | | | | | | | | | | | | | |
| 1. Energy Industries | | | | | | | | | | | | | | | |
| A.2. Manufacturing Industries and Construction | | | | | | | | | | | | | | | |
| A.3. Transport | | | | | | | | | | | | | | | |
| A.4. Other Sectors | | | | | | | | | | | | | | | |
| A.5. Other | | | | | | | | | | | | | | | |
| B. Fugitive Emissions from Fuels | | | | | | | | | | | | | | | |
| B.1. Solid Fuel | | | | | | | | | | | | | | | |
| B.2. Oil and Natural Gas | | | | | | | | | | | | | | | |
| 2. Industrial Processes | | | | | | | | | | | | | | | |
| A. Mineral Products | | | | | | | | | | | | | | | |
| B. Chemical Industry | | | | | | | | | | | | | | | |
| C. Metal Production | | | | | | | | | | | | | | | |
| D. Other Production | | | | | | | | | | | | | | | |
| 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 (net)⁽⁴⁾ | | | | | | | | | | | | | | | |
| A. Forest Land | | | | | | | | | | | | | | | |
| B. Cropland | | | | | | | | | | | | | | | |
| C. Grassland | | | | | | | | | | | | | | | |
| D. Wetlands | | | | | | | | | | | | | | | |
| E. Settlements | | | | | | | | | | | | | | | |
| F. Other Land | | | | | | | | | | | | | | | |
| G. Other | | | | | | | | | | | | | | | |

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

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 2 of 2)

Recalculated year:

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ | | | | | CH ₄ | | | | | N ₂ O | | | | |
|---|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|
| | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ |
| | CO ₂ equivalent (Gg) | | | (%) | (%) | CO ₂ equivalent (Gg) | | | (%) | (%) | CO ₂ equivalent (Gg) | | | (%) | (%) |
| 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: | | | | | | | | | | | | | | | |
| International Bunkers | | | | | | | | | | | | | | | |
| Multilateral Operations | | | | | | | | | | | | | | | |
| CO ₂ Emissions from Biomass | | | | | | | | | | | | | | | |

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | HFCs | | | | | PFCs | | | | | SF ₆ | | | | |
|---|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|---------------------------------|-------------------|------------|---------------------------|---|
| | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ | Previous submission | Latest submission | Difference | Difference ⁽¹⁾ | Impact of recalculation on total emissions ⁽²⁾ |
| | CO ₂ equivalent (Gg) | | | (%) | (%) | CO ₂ equivalent (Gg) | | | (%) | (%) | CO ₂ equivalent (Gg) | | | (%) | (%) |
| Total Actual Emissions | | | | | | | | | | | | | | | |
| C.3 Aluminium Production | | | | | | | | | | | | | | | |
| E. Production of Halocarbons and SF ₆ | | | | | | | | | | | | | | | |
| F. Consumption of Halocarbons and SF ₆ | | | | | | | | | | | | | | | |
| 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 ⁽⁵⁾ | | | | |
| Total CO ₂ Equivalent Emissions without Land Use, Land-Use Change and Forestry ⁽⁵⁾ | | | | |

⁽¹⁾ Estimate the percentage change due to recalculation with respect to the previous submission (Percentage change = $100 \times [(LS-PS)/PS]$, 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 CO₂ equivalent, excluding GHGs from the LULUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = $100 \times [(source (LS) - source (PS))/total emissions (LS)]$, where LS = Latest submission, PS = Previous submission.

⁽³⁾ Parties which previously reported CO₂ from soils in the Agriculture sector should note this in the NIR.

⁽⁴⁾ Net CO₂ emissions/removals to be reported.

⁽⁵⁾ The information in these rows is requested to facilitate comparison of data, because Parties differ in the way they report emissions and removals from Land Use, Land-Use Change and Forestry.

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 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.

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

Country
Year
Submission

| 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 - 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 ₂ O | | | | |
| | | | | |
| 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 ₂ O | | | | |
| | | | | |
| 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 EMISSIONS TRENDS (CO₂)
(Sheet 1 of 5)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ 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 I.A) | | | | | | | | | | | | | | | | |
| Total CO₂ emissions including net CO₂ from LULUCF⁽³⁾ | | | | | | | | | | | | | | | | |
| Total CO₂ emissions excluding net CO₂ from LULUCF⁽³⁾ | | | | | | | | | | | | | | | | |
| Memo Items: | | | | | | | | | | | | | | | | |
| International Bunkers | | | | | | | | | | | | | | | | |
| Aviation | | | | | | | | | | | | | | | | |
| Marine | | | | | | | | | | | | | | | | |
| Multilateral Operations | | | | | | | | | | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | | | | | | | | | | |

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

TABLE 10 EMISSIONS TRENDS (CH₄)
(Sheet 2 of 5)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ to latest reported year |
|---|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| | (Gg) | | | | | | | | | | | | | | | (%) |
| Total CH₄ emissions | | | | | | | | | | | | | | | | |
| 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) | | | | | | | | | | | | | | | | |
| Memo Items: | | | | | | | | | | | | | | | | |
| International Bunkers | | | | | | | | | | | | | | | | |
| Aviation | | | | | | | | | | | | | | | | |
| Marine | | | | | | | | | | | | | | | | |
| Multilateral Operations | | | | | | | | | | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | | | | | | | | | | |

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

TABLE 10 EMISSIONS TRENDS (N₂O)
(Sheet 3 of 5)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ to latest reported year |
|---|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| | (Gg) | | | | | | | | | | | | | | | (%) |
| Total N₂O emissions | | | | | | | | | | | | | | | | |
| 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) | | | | | | | | | | | | | | | | |
| Memo Items: | | | | | | | | | | | | | | | | |
| International Bunkers | | | | | | | | | | | | | | | | |
| Aviation | | | | | | | | | | | | | | | | |
| Marine | | | | | | | | | | | | | | | | |
| Multilateral Operations | | | | | | | | | | | | | | | | |
| CO₂ Emissions from Biomass | | | | | | | | | | | | | | | | |

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

TABLE 10 EMISSIONS TRENDS (HFCs, PFCs and SF₆)
(Sheet 4 of 5)

Country
Year
Submission

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ to latest reported year |
|---|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| | (Gg) | | | | | | | | | | | | | | | % |
| Emissions of HFCs⁽⁴⁾ - (Gg CO₂ 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 ⁽⁵⁾ - (Gg CO ₂ equivalent) | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Emissions of PFCs⁽⁴⁾ - (Gg CO₂ equivalent) | | | | | | | | | | | | | | | | |
| CF ₄ | | | | | | | | | | | | | | | | |
| C ₂ F ₆ | | | | | | | | | | | | | | | | |
| C ₃ F ₈ | | | | | | | | | | | | | | | | |
| C ₄ F ₁₀ | | | | | | | | | | | | | | | | |
| c-C ₄ F ₈ | | | | | | | | | | | | | | | | |
| C ₅ F ₁₂ | | | | | | | | | | | | | | | | |
| C ₆ F ₁₄ | | | | | | | | | | | | | | | | |
| Unspecified mix of listed PFCs ⁽⁵⁾ - (Gg CO ₂ equivalent) | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Emissions of SF₆⁽⁴⁾ - (Gg CO₂ equivalent) | | | | | | | | | | | | | | | | |
| SF ₆ | | | | | | | | | | | | | | | | |

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

| Chemical | GWP |
|---------------------------------|-------|
| HFCs | |
| HFC-23 | 11700 |
| HFC-32 | 650 |
| HFC-41 | 150 |
| HFC-43-10mee | 1300 |
| HFC-125 | 2800 |
| HFC-134 | 1000 |
| HFC-134a | 1300 |
| HFC-152a | 140 |
| HFC-143 | 300 |
| HFC-143a | 3800 |
| HFC-227ea | 2900 |
| HFC-236fa | 6300 |
| HFC-245ca | 560 |
| PFCs | |
| CF ₄ | 6500 |
| C ₂ F ₆ | 9200 |
| C ₃ F ₈ | 7000 |
| C ₄ F ₁₀ | 7000 |
| c-C ₄ F ₈ | 8700 |
| C ₅ F ₁₂ | 7500 |
| C ₆ F ₁₄ | 7400 |
| SF ₆ | 23900 |

TABLE 10 EMISSIONS TRENDS (SUMMARY)
(Sheet 5 of 5)

Country
Year
Submission

| GREENHOUSE GAS EMISSIONS | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ to latest reported year |
|--|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| | CO ₂ equivalent (Gg) | | | | | | | | | | | | | | | (%) |
| CO ₂ emissions including net CO ₂ from LULUCF ⁽³⁾ | | | | | | | | | | | | | | | | |
| CO ₂ emissions excluding net CO ₂ from LULUCF ⁽³⁾ | | | | | | | | | | | | | | | | |
| CH ₄ | | | | | | | | | | | | | | | | |
| N ₂ O | | | | | | | | | | | | | | | | |
| HFCs | | | | | | | | | | | | | | | | |
| PFCs | | | | | | | | | | | | | | | | |
| SF ₆ | | | | | | | | | | | | | | | | |
| Total (including net CO ₂ from LULUCF) ⁽⁵⁾ | | | | | | | | | | | | | | | | |
| Total (excluding net CO ₂ from LULUCF) ^{(5), (6)} | | | | | | | | | | | | | | | | |

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Change from 1990 ⁽¹⁾ 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 ⁽⁷⁾ | | | | | | | | | | | | | | | | |
| 6. Waste | | | | | | | | | | | | | | | | |
| 7. Other | | | | | | | | | | | | | | | | |
| Total (including LULUCF) ⁽⁷⁾ | | | | | | | | | | | | | | | | |

- ⁽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⁾ The information in these rows is requested to facilitate comparison of data, because Parties differ in the way they report CO₂ emissions and removals from LULUCF.
- ⁽⁴⁾ 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 CO₂ equivalent emissions.
- ⁽⁵⁾ 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 CO₂ equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.
- ⁽⁶⁾ These totals will differ from the totals reported in table Summary 2 if Parties report non-CO₂ emissions from LULUCF.
- ⁽⁷⁾ Includes net CO₂, CH₄ and N₂O from LULUCF.

| |
|---|
| Documentation box: |
| <ul style="list-style-type: none"> 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. |
| |
