



**Report of the individual review of the annual submission of France
submitted in 2011**

Note by the secretariat

The report of the individual review of the annual submission of France submitted in 2011 was published on 6 July 2012. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/ARR/2011/FRA, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.



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Report of the individual review of the annual submission of France submitted in 2011*

* In the symbol for this document, 2011 refers to the year in which the inventory was submitted, and not to the year of publication.

¹ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions

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I. Introduction and summary

A. Overview

1. This report covers the centralized review of the 2011 annual submission of France, coordinated by the UNFCCC secretariat, in accordance with decision 22/CMP.1. The review took place from 5 to 10 September 2011 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Ms. Anke Herold (Germany) and Mr. Paul Filliger (Switzerland); energy – Ms. Kristien Aernouts (Belgium), Mr. Vishwa Bandhu Pant (India) and Mr. Glen Whitehead (Australia); industrial processes – Ms. Youngsook Lyu (Republic of Korea) and Mr. Menouer Boughedaoui (Algeria); agriculture – Mr. Michael Anderl (Austria) and Mr. Jacques Kouazounde (Benin); land use, land-use change and forestry (LULUCF) – Mr. Nagmeldin Elhassan (Sudan) and Mr. Héctor Ginzo (Argentina); and waste – Mr. Davor Vešligaj (Croatia). Ms. Herold and Mr. Elhassan were the lead reviewers. The review was coordinated by Mr. Javier Hanna and Mr. Roman Payo (UNFCCC secretariat).

2. In accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol” (decision 22/CMP.1) (hereinafter referred to as the Article 8 review guidelines), a draft version of this report was communicated to the Government of France, which made no comment on it.

B. Emission profiles and trends

3. In 2009, the main greenhouse gas (GHG) in France was carbon dioxide (CO₂), accounting for 72.2 per cent of total GHG emissions¹ expressed in CO₂ eq, followed by methane (CH₄) (12.6 per cent) and nitrous oxide (N₂O) (12.1 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) collectively accounted for 3.2 per cent of the overall GHG emissions in the country. The energy sector accounted for 69.7 per cent of total GHG emissions, followed by the agriculture sector (18.5 per cent), the industrial processes sector (7.3 per cent), the waste sector (4.2 per cent) and the solvent and other product use sector (0.2 per cent). Total GHG emissions amounted to 517,247.89 Gg CO₂ eq and decreased by 8.1 per cent between the base year² and 2009.

4. Tables 1 and 2 show GHG emissions from Annex A sources, emissions and removals from the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively. In table 1, CO₂, CH₄ and N₂O emissions included in the rows under Annex A sources do not include emissions and removals from the LULUCF sector.

¹ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

² “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from Annex A sources only.

Table 1
Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, by gas, base year to 2009^a

	Greenhouse gas	Gg CO ₂ eq								Change (%)
		Base year ^a	1990	1995	2000	2005	2007	2008	2009	Base year–2009
Annex A sources	CO ₂	393 607.71	393 607.71	392 840.88	408 932.91	420 262.07	397 529.92	390 614.43	373 474.67	–5.1
	CH ₄	66 529.83	66 529.83	68 232.06	68 401.34	65 548.49	65 510.04	65 943.21	65 013.83	–2.3
	N ₂ O	92 699.07	92 699.07	90 590.99	77 967.14	68 240.87	65 325.10	66 331.64	62 387.36	–32.7
	HFCs	3 740.35	3 740.35	3 209.85	7 474.00	12 494.87	14 469.62	15 036.74	15 433.30	312.6
	PFCs	4 293.45	4 293.45	2 561.81	2 486.86	1 430.37	920.20	559.23	364.86	–91.5
	SF ₆	2 015.51	2 015.51	2 236.66	1 575.37	995.35	745.76	692.68	573.87	–71.5
KP-LULUCF	Article 3.3 ^b									
	CO ₂							4 800.19	3 011.95	
	CH ₄							148.41	130.09	
	N ₂ O							65.95	66.73	
	Article 3.4 ^c									
	CO ₂	NA						–78 882.28	–72 863.37	NA
	CH ₄	NA						585.20	619.30	NA
	N ₂ O	NA						62.40	71.23	NA

Abbreviations: KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases.

^b Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation. Only the inventory years of the commitment period must be reported.

^c Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation. For cropland management, grazing land management and revegetation, the base year and the inventory years of the commitment period must be reported.

Table 2
Greenhouse gas emissions by sector and activity, base year to 2009^a

		Gg CO ₂ eq								Change (%)
Sector		Base year ^a	1990	1995	2000	2005	2007	2008	2009	Base year– 2009
Annex A	Energy	379 782.98	379 782.98	381 140.10	396 179.35	405 234.30	382 227.39	376 328.97	360 669.89	–5.0
	Industrial processes	59 093.96	59 093.96	57 460.62	45 033.29	43 030.36	42 565.59	40 618.78	37 595.11	–36.4
	Solvent and other product use	2 062.82	2 062.82	1 807.33	1 826.19	1 465.32	1 376.45	1 301.87	1 208.35	–41.4
	Agriculture	108 724.80	108 724.80	102 905.05	104 667.76	98 262.31	97 014.25	99 355.59	95 792.72	–11.9
	Waste	13 221.35	13 221.35	16 359.14	19 131.05	20 979.72	21 316.97	21 572.73	21 981.82	66.3
LULUCF		NA	–39 698.63	–47 822.34	–49 051.17	–64 881.33	–68 518.89	–68 903.09	–63 920.45	NA
Total (with LULUCF)		NA	523 187.29	511 849.90	517 786.46	504 090.68	475 981.75	470 274.84	453 327.44	NA
Total (without LULUCF)		562 885.92	562 885.92	559 672.25	566 837.63	568 972.01	544 500.65	539 177.93	517 247.89	–8.1
Other ^b		NO	NO	NO	NO	NO	NO	NO	NO	NA
KP-LULUCF	Article 3.3 ^c	Afforestation and reforestation						–6 713.49	–6 897.86	
		Deforestation						11 728.05	10 106.63	
		Total (3.3)						5 014.56	3 208.77	
	Article 3.4 ^d	Forest management						–78 234.68	–72 172.84	
		Cropland management	NA					NA	NA	NA
		Grazing land management	NA					NA	NA	NA
		Revegetation	NA					NA	NA	NA
		Total (3.4)	NA					–78 234.68	–72 172.84	NA

Abbreviations: LULUCF = land use, land-use change and forestry, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NO = not occurring.

^a “Base year” for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases.

^b Emissions/removals reported in the sector other (sector 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in the national totals.

^c Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation. Only the inventory years of the commitment period must be reported.

^d Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation. For cropland management, grazing land management and revegetation, the base year and the inventory years of the commitment period must be reported.

5. Table 3 provides information on the most important emissions and removals and accounting parameters that will be included in the compilation and accounting database.

Table 3
Information to be included in the compilation and accounting database in in t CO₂ eq

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment^a</i>	<i>Final^b</i>	<i>Accounting quantity^c</i>
Commitment period reserve	2 537 663 976			2 537 663 976	
Annex A emissions for current inventory year					
CO ₂	373 474 666			373 474 666	
CH ₄	65 013 834			65 013 834	
N ₂ O	62 387 359			62 387 359	
HFCs	15 433 301			15 433 301	
PFCs	364 859			364 859	
SF ₆	573 869			573 869	
Total Annex A sources	517 247 888			517 247 888	
Activities under Article 3, paragraph 3, for current inventory year					
3.3 Afforestation and reforestation on non-harvested land for current year of commitment period as reported	-6 897 857			-6 897 857	-6 897 857
3.3 Afforestation and reforestation on harvested land for current year of commitment period as reported	NA, NO			NA, NO	0
3.3 Deforestation for current year of commitment period as reported	10 106 627			10 106 627	10 106 627
Activities under Article 3, paragraph 4, for current inventory year^d					
3.4 Forest management for current year of commitment period	-72 172 836			-72 172 836	-8 223 327
3.4 Cropland management for current year of commitment period					
3.4 Cropland management for base year					
3.4 Grazing land management for current year of commitment period					
3.4 Grazing land management for base year					
3.4 Revegetation for current year of commitment period					
3.4 Revegetation for base year					

Abbreviations: NA = not applicable, NO = not occurring.

^a "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

^b "Final" includes revised estimates, if any, and/or adjustments, if any.

^c "Accounting quantity" is included in this table only for Parties that chose annual accounting for activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, if any.

^d Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

6. The Party's 2011 annual inventory submission was submitted on 11 April 2011; it contains two complete sets of common reporting format (CRF) tables (one for the Convention and another for the Kyoto Protocol) for the period 1990–2009 and a national inventory report (NIR). France also submitted information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry, and the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 11 April 2011 and resubmitted on 20 May 2011. The annual submission was submitted in accordance with decision 15/CMP.1.

7. France resubmitted its CRF tables on 12 May 2011. The resubmission contained two complete sets of CRF tables (one for the Convention and another for the Kyoto Protocol) for the period 1990–2009 and a corrigendum to the NIR. A second corrigendum to the NIR was submitted on 1 August 2011. France also submitted revised emission estimates in the CRF tables on 9 September 2011 during the review week, including a complete set of CRF tables for the Kyoto Protocol. The values used in this report are based on the values contained in the submission of 9 September 2011.

8. Where necessary, the expert review team (ERT) also used previous years' submissions during the review. In addition, the ERT used the standard independent assessment report (SIAR), parts I and II, to review information on the accounting of Kyoto Protocol units (including the SEF tables and their comparison report) and on the national registry.³

9. During the review, France provided the ERT with additional information and documents which are not part of the annual submission but are in many cases referenced in the NIR. The full list of information and documents used during the review is provided in annex I to this report.

Completeness of inventory

10. The inventory covers all source and sink categories for the period 1990–2009 and is complete in terms of years and geographical coverage. Indeed, only GHG emissions from multilateral operations (memo item) are reported as not estimated ("NE"). France has provided a complete set of CRF tables, except for CRF table 7 (key categories) and CRF table 8(b) (explanations of recalculations). However, related information on recalculations is included in the NIR. The table NIR-3, on the key category analysis of KP-LULUCF activities, has also not been provided.

³ The SIAR, parts I and II, is prepared by an independent assessor in line with decision 16/CP.10 (paras. 5(a), 6(c) and 6(k)), under the auspices of the international transaction log administrator using procedures agreed in the Registry System Administrators Forum. Part I is a completeness check of the submitted information relating to the accounting of Kyoto Protocol units (including the SEF tables and their comparison report) and to national registries. Part II contains a substantive assessment of the submitted information and identifies any potential problem regarding information on the accounting of Kyoto Protocol units and the national registry.

11. In response to a question raised by the ERT during the review, France explained that table NIR-3 will be reported in its next annual submission, and the ERT recommends that France do so. With regard to the CRF table 7, France responded that the information on the key categories was already included in the NIR (in section 1.5 and annex 1). As regards CRF table 8(b), France replied that explanations for the recalculations were already included in the NIR (in the sectoral sections, summary section 10 and annex 6), and that providing the same information both in the NIR and in the CRF tables is a duplication of efforts and resources (leading to possible additional inconsistencies or mistakes).

12. The ERT notes that CRF table 7 and 8(b) are part of the official submission as required in the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories” (hereinafter referred to as the UNFCCC reporting guidelines). As indicated below (see paras. 27–29 below), the documentation on the recalculations carried out by France should be improved; this process could be facilitated by filling in CRF table 8(b). The ERT reiterates the recommendation in the previous review report that France provide CRF tables 7 and 8(b), at least for the base year and the latest submission year, as appropriate, in order to ensure the consistency and completeness of its reporting in its next annual submission.

2. A description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Overview

13. The ERT concluded that the national system continues to perform its required functions. France has described the changes to its national system since the previous annual submission; these changes are discussed in chapter II.G.3 of this report.

Inventory planning

14. The NIR describes the national system for the preparation of the inventory. The Ministère de l’Ecologie, du Développement Durable, des Transports et du Logement (MEDDTL) has overall responsibility for the national inventory. MEDDTL coordinates with other ministries, attributes responsibilities to different institutions and organizations and has final responsibility for submitting the inventory to the UNFCCC.

15. The preparation of the GHG inventory is delegated to the Centre Interprofessionnel Technique d’Etudes de la Pollution Atmosphérique (CITEPA). CITEPA collects the data from other institutions, selects the methods, prepares the inventory, implements quality assurance/quality control (QA/QC) procedures and archives the inventory and related documents. The Ecole des Mines de Paris is responsible for the estimation of the emissions of fluorinated gases (F-gases) and provides these emission estimates to CITEPA.

16. The Groupe de concertation et d’information sur les inventaires d’émission (GCIIE), coordinated by MEDDTL and composed of all relevant ministries, discusses the results of each annual GHG inventory, advises and approves the methodological changes and the inventory improvement plan, provides recommendations and proposes actions and research activities for the improvement of the inventory.

17. France has established a process for the official consideration and approval of the inventory, including recalculations, prior to its submission and for responding to any issues raised by the inventory review. Every year the GCIIE reviews the draft inventory and the MEDDTL revise, if necessary, the inventory before approving it and submitting it to the

UNFCCC. The findings of the review are incorporated, together with the findings from the GCIIE, into an inventory action plan.

18. The ERT considers that the description of the national system in the NIR (section 1.2) is very brief and does not mention all of the institutions involved in the inventory preparation process; for example, the Ecole des Mines de Paris, responsible for the estimation of F-gases, and the Agence de l'Environnement et de la Maîtrise de l'Energie, which has an important role in the compilation of the inventory on the waste sector by providing activity data (AD), some emission factors (EFs) and the methodology to estimate emissions from landfills (as reported in section 8 of the NIR), are not mentioned in the general description of the national system. The ERT reiterates the recommendation of the previous review report that France improve the general description of the national system in the NIR, including a list all of the institutions involved in the inventory preparation process in its next annual submission.

19. In response to a recommendation in the previous review report, France has included additional information on the national system in several sectoral chapters of the NIR (e.g. the energy and LULUCF sectors). The ERT commends France for this improvement.

Inventory preparation

Key categories

20. France has reported a key category tier 1 analysis, both level and trend assessments, as part of its 2011 submission. The key category analysis performed by France and that performed by the secretariat⁴ produced similar, although not identical, results owing to the different levels of disaggregation used (France used a higher level of disaggregation). France has included the LULUCF sector in its key category analysis, which was performed in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF).

21. The ERT noted that in previous review reports it was recommended that France apply a tier 2 key category analysis, in line with the IPCC good practice guidance. In response to a question raised by the ERT during the review, France responded that the work to apply a tier 2 key category analysis is ongoing and that, in the beginning of 2012, the tier 1 uncertainty analysis and the key category analysis will have the same sectoral split and France will be able to combine them to apply a tier 2 key category analysis. The ERT commends France for the work conducted and encourages France to apply a tier 2 key category analysis in its next annual submission.

22. France has not identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, and table NIR-3 has not been completed with this information. In response to a question raised by the ERT during the review, France indicated that it is planning to complete table NIR-3 for the 2012 annual submission. The

⁴ The secretariat identified, for each Party, the categories that are key categories in terms of their absolute level of emissions, applying the tier 1 level assessment as described in the IPCC good practice guidance for LULUCF. Key categories according to the tier 1 trend assessment were also identified for Parties that provided a full set of CRF tables for the base year or period. Where the Party performed a key category analysis, the key categories presented in this report follow the Party's analysis. However, they are presented at the level of aggregation corresponding to a tier 1 key category assessment conducted by the secretariat.

ERT reiterates the recommendation in the previous review report that France include this information in its next annual submission, following the guidance on establishing the relationship between the KP-LULUCF activities and the associated key categories in the UNFCCC inventory as provided in chapter 5.4.4 of the IPCC good practice guidance for LULUCF.

Uncertainties

23. France has provided a tier 1 uncertainty analysis for 36 categories. The ERT noted that these 36 categories cover all categories and gases reported, but the ERT also noted that France has aggregated multiple categories and gases (representing 1.0 per cent of total GHG emissions) under what France denominated “other emission sources” and that the LULUCF sector is reported aggregated as a sector, without distinction between categories or gases. The ERT further noted that the tier 1 uncertainty analysis of the IPCC good practice guidance requires one line for each category, fuel (where applicable) and GHG. The ERT therefore strongly recommends that France report its uncertainty analysis in accordance with the IPCC good practice guidance in its next annual submission. France has estimated the overall uncertainty for 2009 to be 18.3 per cent if the LULUCF sector is excluded from the analysis and 22.5 per cent if this sector is included. France has estimated the uncertainty in the trend to be 2.5 per cent without the LULUCF sector and 4.0 per cent with the LULUCF sector.

24. France has not provided a tier 2 uncertainty analysis. In response to a question raised by the ERT during the review, France explained that it is planning to implement a tier 2 uncertainty analysis in phases. The first phase of the tier 2 analysis will cover the categories enteric fermentation and manure management under the agriculture sector, for which detailed uncertainty data may be available. France will report on this experience in the NIR of its 2012 annual submission. The ERT commends France for the planned work and is of the view that it is reasonable for France to start with the agriculture sector because the uncertainty of the inventory is dominated by the uncertainty in that sector. In addition, agriculture is more important for France than for many other Parties included in Annex I to the Convention. This importance also explains why the uncertainty for 2009 of the French inventory is relatively high compared with many other industrialized countries. Therefore, the improvement of the uncertainty analysis should be given high priority.

25. As indicated in the previous review report and also in paragraph 23 above, the uncertainties are provided at a high level of aggregation of categories and, consequently, the same uncertainty values for the AD and EFs are applied to all underlying subcategories, but the quality and accuracy of the AD and EFs used to calculate the estimates vary across the subcategories and this should be reflected in the uncertainty analysis. Subcategories with different data quality and based on different methodological tiers should be treated separately in the uncertainty analysis in accordance with the recommendations of the IPCC good practice guidance. Therefore, the ERT believes, similarly to previous ERTs, that the uncertainty analysis does not adequately reflect the methodologies and data quality for the different categories, cannot be used to prioritize inventory improvements and is not in accordance with the IPCC good practice guidance. The ERT strongly reiterates the recommendations from previous review reports that France improve the calculation of uncertainties, in accordance with the IPCC good practice guidance, and the reporting of the uncertainty analysis in its next annual submission, including more detailed information on how the uncertainty values are established for each category. In addition, the ERT considers that the first phase of the implementation of a tier 2 approach (see para. 24 above) will be a big step forward in improving the accuracy of the uncertainty analysis.

Recalculations and time-series consistency

26. Recalculations have been performed and generally reported in accordance with the IPCC good practice guidance. The ERT noted that the recalculations reported by France of the time series 1990–2008 have been undertaken to take into account revised EFs and AD in all sectors and gases (table 76 of the NIR lists 43 categories for which recalculations have been performed). Very substantial recalculations have been performed in the waste sector (e.g. the recalculation of the percentage of gas captured from landfills, in response to the adjustment applied to the solid waste disposal on land category in the previous review report; see paras. 127 (a), 131 and 132 below) and the LULUCF sector (e.g. the inclusion of dead wood in the forest carbon stock, and the inclusion of emissions from forest fires). In the energy sector, numerous changes have been reported, the most important being the methodological changes to the calculation of CH₄ emissions from gas distribution and the revision of the N₂O and CH₄ EFs for road transportation. The magnitude of the recalculations' impact include: a decrease in estimated total GHG emissions excluding LULUCF of 0.1 per cent in 1990 and an increase of 2.1 per cent in 2008. For estimated total GHG emissions including LULUCF, the emissions decreased by 1.3 per cent for 1990 and increased by 2.1 per cent for 2008.

27. France has provided an overview of the recalculations in chapter 10 of and in annex 6 to the NIR. The rationale for some of the recalculations is partially provided in the sectoral sections of the NIR. However, CRF table 8(b) is empty, not providing any explanation on recalculations (see para. 10 above). The ERT noted that France has improved its explanations of the recalculations compared with the previous annual submission (e.g. NIR table 76 and annex 6), but some recalculations (small) are not reported in the NIR. In response to a question raised by the ERT during the review, France explained that recalculations with an impact of less than 0.5 per cent on the category emissions are not systematically reported. The ERT considers that this is not in accordance with the UNFCCC reporting guidelines and negatively affects completeness and transparency. The ERT therefore recommends that France report on all recalculations in its next annual submission.

28. The ERT also considers that some of the explanations provided in the sectoral chapters of the NIR include only information on the magnitude of the change but do not provide a rationale for the recalculations; for example, for consumption of halocarbons and SF₆, the NIR states that the Ecole des Mines de Paris has revised the methodology and the resulting magnitude of the change has been reported, but no information has been provided on the methodological changes.

29. The ERT recommends that France report in greater detail on the reasons for the recalculations in the NIR of its next annual submission. The ERT reiterates the recommendation of the previous review report that France improve the explanations of the recalculations in the sectoral chapters of the NIR, indicating the reasons for the recalculations, the sources of new information included, the types of errors corrected or the exact methodological revisions that have taken place.

Verification and quality assurance/quality control approaches

30. France has elaborated and implemented a QA/QC plan in accordance with the IPCC good practice guidance. This includes general QC procedures (tier 1) as well as some source/sink category-specific procedures (tier 2) for the key categories and also for those categories in which significant methodological changes or data revisions have occurred.

31. In response to a recommendation in the previous review report, France has extended and improved the description of the QA/QC procedures in overview chapter 1.6 of the NIR as well as in the sectoral chapters. Category-specific QC procedures are now included in the

description, but references to tier 2 QC checks are still sparse. The ERT recommends that France utilize tier 2 QC procedures for categories where emissions are estimated with non-tier 1 methods, as recommended in the IPCC good practice guidance. A new tool, the Réseau Intégré du Système Qualité, has been implemented and described for the first time. It collects all the information on the errors detected in the inventory and the improvements made. The ERT commends France for the developments to its QA/QC procedures and encourages the Party to continue improving its QA/QC procedures, report on the progress made and provide more details on any QA and verification procedures implemented or planned in its next annual submission.

Transparency

32. The NIR is divided into two parts: the first, smaller part (which follows the annotated outline of the NIR) provides an overview of the inventory and also the supplementary information to be reported under the Kyoto Protocol; the second, larger part expands the information on the inventory. The ERT considers that this structure does not support the transparency of the NIR. The relevant information on emission categories has been split between the two parts of the NIR and duplications have been observed (e.g. the QA/QC plan). In response to a recommendation in the previous review report, the balance between the two reports (i.e. the main body of the NIR and the report compiled by CITEPA on the organization and the methodologies to estimate emissions⁵) has been improved, but the ERT considers that the NIR still does not properly reflect the high quality of the French inventory and that it is frequently not sufficiently detailed or does not provide specific information to enable the ERT to assess whether the inventory is in line with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines), the IPCC good practice guidance and the IPCC good practice guidance for LULUCF. The ERT recommends that France continue to improve the transparency of the NIR according to the detailed recommendations from the previous review report.

33. France has submitted two complete sets of CRF tables, one under the Convention and one under the Kyoto Protocol, with different geographical coverage (the GHG inventory under the Kyoto Protocol does not include the countries and overseas territories not included in the European Union⁶), but only one NIR. In the NIR, it is very often not clear to which set of CRF tables the description and figures refer. France appears to have aggregated some emission figures in the NIR, but these aggregated figures do not correspond to either set of CRF tables (e.g. some of the aggregated figures in NIR table 76 “Changes since the update in December 2009”). In response to a question raised by the ERT during the review, France stated that NIR table 76 covers only mainland France. The ERT strongly recommends that France, in its NIR, refer to the CRF tables submitted under the Kyoto Protocol or, when this is not the case, clearly indicate to which territorial aggregation the information refers.

Inventory management

34. The NIR reports that France has a centralized archiving system, which includes the archiving of disaggregated EFs and AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. The archived

⁵ Organisation et méthodes des inventaires nationaux des émissions atmosphériques en France, 8th edition, updated February 2001.

⁶ These countries and overseas territories not included in the EU are, according to section 1.8 of the NIR: the French Polynesia, Wallis-et-Futuna, Mayotte, New Caledonia, Saint-Pierre-et-Miquelon, Clipperton and the French Antarctic Territories.

information also includes internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements. The archived information is maintained and updated by CITEPA.

3. Follow-up to previous reviews

35. France has systematically addressed and implemented the recommendations from previous review reports, including the enhancement of the description of the national system (see para. 19 above) and has also recalculated the CH₄ recovered from landfills in the waste sector in response to the adjustment applied to the solid waste disposal on land category in the previous review report (see paras. 127(a), 131 and 132 below). The inventory has reached a high degree of completeness and the completeness and transparency of the NIR are constantly improving.

36. France has also improved the transparency of its reporting, for instance by including more information on QA/QC procedures in the general description as well as in the sectoral chapters of the NIR (see para. 31 above), and by improving the information on the correction of mistakes in the sectoral chapters. A full list of improvements is presented in table 78 of annex 10 to the NIR. The ERT commends France for these improvements in the transparency of its reporting. However, the ERT notes that not all recommendations on transparency from previous review reports have yet been addressed, in particular:

- (a) The application of a tier 2 key category analysis (see para. 21 above);
- (b) The transparency of the information on the key categories and recalculations, including the completion of CRF tables 7 and 8(b) and NIR-3 (see paras. 10, 22, 28 and 29 above);
- (c) The description of sector-specific QA/QC procedures and the appropriate use of notation keys (see para. 107 below).

4. Areas for further improvement

Identified by the Party

37. France has identified several areas for improvement in its NIR. Cross-cutting issues for improvement include: more accurate uncertainty estimates, including the ongoing work on a tier 2 uncertainty analysis using the Monte Carlo method; the qualitative and quantitative improvement of the data collection system; and further development of the QA/QC system. One important element for further improvement is the inventory improvement plan. It is not included in the NIR but, in response to a question raised by the ERT during the review, France indicated that it exists and includes more than 50 planned improvements, with qualitative estimates of the potential impacts, a timetable for their implementation and the decision status of GCIIIE on the subject. The ERT considers that this plan is a very useful tool and encourages France to implement the improvements contained therein and to include information on the plan in the NIR of its next annual submission.

Identified by the expert review team

38. During the review, the ERT identified cross-cutting issues for improvement. These are listed in paragraph 181 below.

39. Recommended improvements relating to specific categories are presented in the relevant sector chapters of this report.

B. Energy

1. Sector overview

40. The energy sector is the main sector in the GHG inventory of France. In 2009, emissions from the energy sector amounted to 360,669.89 Gg CO₂ eq, or 69.7 per cent of total GHG emissions. Since 1990, emissions have decreased by 5.0 per cent due to the reductions in emissions from manufacturing industries and construction by 19,570.77 Gg CO₂ eq (a 23.5 per cent decrease from 1990 to 2009), from energy industries by 5,125.44 Gg CO₂ eq (7.8 per cent), from fugitive emissions from solid fuels by 4,013.61 Gg CO₂ eq (98.7 per cent) and from fugitive emissions from oil and natural gas by 1,127.80 Gg CO₂ eq (18.5 per cent). These decreases were partially compensated by an increase in emissions from transport by 10,644.40 Gg CO₂ eq (8.9 per cent).

41. Within the energy sector, 36.2 per cent of the emissions were from transport, followed by 28.0 per cent from other sectors, 17.6 per cent from manufacturing industries and construction and 16.8 per cent from energy industries. The remaining 1.4 per cent were from fugitive emissions from fuels.

42. France has made recalculations for the energy sector between the 2010 and 2011 submissions following changes in AD, EFs and methodologies and in order to rectify identified errors. The impact of these recalculations on estimated total GHG emissions is a decrease in emissions of 0.05 per cent for 2008 and of 0.06 per cent for 1990 (the impact on the energy sector was a decrease in emissions of 0.1 per cent for 2008 and of 0.7 per cent for 1990). The main recalculations took place in the following categories:

- (a) Public electricity and heat production: the revision of the CH₄ EFs for urban heating;
- (b) Petroleum refining: the revision of the CH₄ EFs;
- (c) Manufacturing industries and construction: revisions to the AD for the whole time series (1990–2008) to take into account autoproduction of electricity and the subtraction of coke used for non-energy purposes; and the revision of the CH₄ EF;
- (d) Transport: for road transportation, the revision of the CH₄ and N₂O EFs for all years of the time series; for other transportation, the revision of the CH₄ EF for gas compressor stations, which was adjusted for the whole time series based on data from the European Union emissions trading scheme (EU ETS); for navigation, the use of a new methodology to split the emissions between inland navigation and international maritime bunker fuels;
- (e) Fugitive emissions from solid fuels: the use of updated measurement data of CH₄ emissions for the whole time series;
- (f) Fugitive emissions from oil and natural gas: for oil, the correction of errors for 1995, 1996 and 2007 and the reallocation of emissions from oil refining/storage to oil transport; for natural gas, the use of a new methodology for estimating CH₄ emissions from natural gas transport.

43. In addition to the recalculations reported in the NIR (annex 6 or in the sectoral chapter), the ERT found that additional recalculations had been conducted but were not reported in the NIR (see para. 27 above). The ERT noted that the recalculations for fugitive emissions for oil from fluid catalytic cracking are reported as related to CO₂ emissions in page 120 of the NIR but as related to CH₄ in table 76 in the NIR. The ERT recommends that France improve its QC procedures when reporting recalculations in its next annual submission.

44. The ERT identified that the geographical coverage of the AD for the energy sector provided in the NIR was not consistent, and in some cases not completely transparent (see para. 33 above). For example, the data on the reference approach include all French territories, while most of the sectoral data do not; and the data on the recalculations in annex 6 to the NIR are for mainland France only. The ERT strongly recommends that France, in its NIR, refer to the CRF tables submitted under the Kyoto Protocol or, when this is not the case, clearly indicate to which territorial aggregation the information refers.

45. The ERT noted that France provided more detailed information on country-specific issues for individual categories and subcategories in the energy sector (e.g. for iron and steel production) and improved the descriptions of the EF and implied emission factor (IEF) trends in the NIR, in response to the recommendations in the previous review report. The ERT commends France for these improvements.

2. Reference and sectoral approaches

Comparison of the reference approach with the sectoral approach and international statistics

46. CO₂ emissions from fuel combustion were calculated using the reference approach and the sectoral approach. For 2009, CO₂ emissions from the sectoral approach were 1.9 per cent higher than the emissions from the reference approach. The ERT welcomes the fact that France has calculated the emissions for the reference approach in more detail than in previous submissions, using the latest available data from the provisional energy balance of 2009. France has reported that the non-energy use of solid and gaseous fuels and the exclusion from the reference approach of the other fuels combusted in waste incineration plants are possible explanations for the differences and fluctuations in the emissions between the two approaches.

47. France is continuing with its ongoing work to improve the consistency of the AD used in the inventory and in the national energy balance (specifically, for iron and steel production and steam crackers). France has also identified the further harmonization of the fuel consumption of biofuels between the inventory and the energy balance as an area for further improvement. The ERT encourages France to report on the progress made in that regard in its next annual submission.

International bunker fuels

48. In the previous review report it was identified that France had allocated fuel consumption emissions to domestic and international navigation for the complete time-series based on historical data from 1993 and only covering movements in the Mediterranean Sea. The ERT welcomes the fact that, in its 2011 submission, France has used new data from a study conducted in 2010 in order to split the international bunker fuels under the French flag between international and coastal navigation (considered domestic), and has recalculated the whole time series for both inland navigation and marine bunkers.

Feedstocks and non-energy use of fuels

49. The ERT welcomes the additional explanations included in the NIR on the feedstocks and non-energy use of fuels that explain the allocation of emissions and how these are estimated. However, the ERT noted that France has reported associated CO₂ emissions of these fuels as “IE” (except for other petroleum products), their allocation as “NA” and “NO”, and the carbon stored and therefore subtracted from emissions from categories in the energy sector as “NA” in CRF table 1.A(d). In response to a question raised by the ERT during the review, France clarified that there is indeed no immediate link between the data in CRF table 1.A(d), which are only used for the calculation of emissions

using the reference approach, and the emissions reported using the sectoral approach. The ERT considers that table 1.A(d) contains information that helps clarify the carbon balance of feedstocks and non-energy use of fuels, including the associated emissions so that they are included in the inventory. The ERT therefore recommends that France improve the information reported in CRF table 1.A(d) in its next annual submission.

3. Key categories

Stationary combustion: liquid, solid, gaseous and other fuels – CO₂

50. During the review France informed the ERT that in future submissions it plans to compare and harmonize the CO₂ emissions for urban heating (under the category public electricity and heat production) reported in the inventory with those reported under the EU ETS. The ERT encourages France to report on the progress made on this verification procedure in its next annual submission.

51. In the previous annual submission, France reported all fuels (gas oil, natural gas, coke oven gas, and blast furnace gas) consumed in coke ovens in iron and steel production under other fuels. In response to a recommendation in the previous review report, France has reallocated the AD and emissions to the correct fuel categories. In addition, the methodology has been changed: emissions are now calculated based on fuel consumption data instead of production data. France has used plant-specific data to derive the EFs for coke plants in the mining industry, but has used country-specific EFs for integrated steel coke plants. The ERT encourages France to check (in cooperation with the appropriate industrial association) if plant-specific EFs per fuel used in the integrated coke ovens are available (e.g. from EU ETS reports). Since France has reported in its NIR that it is already planning to use EU ETS data and/or EFs for manufacturing industries and construction, the ERT suggests that France also check whether the CO₂ EFs from the EU ETS for solid fuels in the production of coke at integrated steel coke plants can be used instead of the country-specific CO₂ EFs, as this could lead to an improvement in the accuracy of France's reporting.

52. In its NIR, France has reported recalculations due to the use of a new methodology in order to take into account the emissions from autoproduction of electricity under manufacturing industries and construction. In response to a question raised by the ERT during the review, France explained that, in the French energy balance, fuel consumption for the production of electricity is calculated for centralized production as well as for autoproduction of electricity. The revisions undertaken are as follows:

(a) Emissions from the centralized production of electricity are now calculated using a bottom-up approach, as all installations report plant-specific data;

(b) Emissions from the autoproduction of electricity are now calculated on the basis of the difference between the total consumption of fuels used for production of electricity and the consumption of fuels used in the centralized production: these consumptions are then allocated between different industries according to the data provided by the Ministry of Environment.

53. These revisions have made the AD on fuel use for electricity production in the inventory consistent with the official French energy balance from 1990 to 2009. The ERT welcomes this effort and recommends that France include this explanation in the NIR of its next annual submission.

54. In the NIR it is explained that France has planned to take into account the plant-specific data from the EU ETS from 2005 onwards on manufacturing industries and construction. The ERT recognizes the amount of work to subsequently revise the emissions

and ensure the consistency of the time series. The ERT encourages France to report on the progress made in its next annual submission.

Civil aviation: aviation gasoline and jet kerosene – CO₂

55. The ERT commends France for addressing the recommendation in the previous review report to report consumption of aviation gasoline and jet kerosene separately. In response to a question raised by the ERT during the review, France indicated that the working group formed to help identify improvements to the emission estimates in civil aviation had already met three times during 2010–2011. The main planned improvements for future inventories include: the collection of more specific bottom-up information on operating conditions at the airport level (e.g. more specific taxiing times); and ensuring that the national emissions inventory for aviation is consistent with the future reporting system of the EU ETS for aviation.

Road transportation: liquid fuels – CO₂

56. As indicated in the previous review report, France derives its CO₂ EFs for gasoline and diesel in road transportation from the COPERT IV model based on the default carbon/hydrogen ratios considered by this model. The ERT noted that the CO₂ IEFs used by France for 2009 (72.35 t/TJ and 74.70 t/TJ for gasoline and diesel oil, respectively) differ from the IPCC default values for Europe (73.00 t/TJ and 74.00 t/TJ, respectively). The previous review report recommended that France try to develop country-specific EFs for diesel oil and gasoline. In response to a question raised by the ERT during the current review, France indicated that the French petroleum industry was contacted regarding the possible availability of such national data, but the industry's response was that these data are not available. However, the ERT notes that it is good practice to use country-specific EFs based on the carbon content of the fuels for the estimation of CO₂ emissions. The ERT therefore strongly recommends that France obtain country-specific values for the carbon content of the diesel and gasoline sold in France, and use this information for its estimations in its next annual submission.

57. In annex 3 to the NIR, France has reported the percentages of biofuels in fuels used in the country but it has excluded the use of these fuels in the French overseas territories. The ERT noted that the amount of biodiesel and bioethanol combusted cannot be estimated from these percentages and the data in the CRF tables. To increase transparency, the ERT encourages France to report separately the AD for biodiesel and bioethanol in its NIR in its next annual submission.

58. France has indicated in the NIR that the statistics compiled by the Commission des Comptes des Transports de la Nation will be revised, including traffic statistics and the unitary fuel consumption of vehicles. These revisions will have an effect on the whole time series of fuel consumption and related emissions for road transportation. The ERT encourages France to report on the progress made in its next annual submission.

Oil and natural gas⁷ – CO₂, CH₄ and N₂O

59. The ERT considers it unclear how France has allocated fugitive emissions from petroleum refining. In its NIR, France has stated that CO₂ emissions from refining processes reported under fugitive emissions are based on the national CO₂ EFs from table 25 of the NIR, which are fuel combustion EFs. For the CH₄ EF, France has used the

⁷ Not all emissions related to all gases under this category are key categories. However, since the calculation procedures for issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

emissions reported directly by the companies involved, and for the N₂O EF, France has referred to the EFs for fuel combustion. In response to a question raised by the ERT during the review, France explained that the total emissions from petroleum refining are based on plant-specific data, but that there is a problem with the allocation of emissions between fugitive emissions and fuel combustion emissions: some fuel consumption emissions for fluid catalytic cracking or sulphur recovery plants are reported under fugitive emissions from oil and natural gas, but they will be reallocated to the fuel combustion sector in the next annual submission. The ERT recommends that France reallocate the fuel combustion emissions from petroleum refining to fuel combustion and clearly describe the allocation of petroleum refining emissions in the NIR of its next annual submission.

C. Industrial processes and solvent and other product use

1. Sector overview

60. In 2009, emissions from the industrial processes sector amounted to 37,595.11 Gg CO₂ eq, or 7.3 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 1,208.35 Gg CO₂ eq, or 0.2 per cent of total GHG emissions. Since 1990, emissions have decreased by 36.4 per cent in the industrial processes sector, and decreased by 41.4 per cent in the solvent and other product use sector.

61. The key driver for the decrease in emissions in the industrial processes sector is the decrease in emissions from chemical industry (by 21,938.22 Gg CO₂ eq or 77.5 per cent), due to the substantial decrease in N₂O emissions from nitric acid production, adipic acid production and glyoxylic acid production between 1990 and 2009, mainly as a result of the implementation of abatement measures. Between 1990 and 2009, emissions from adipic acid production decreased by 13,385.79 Gg CO₂ eq (or by 90.4 per cent), emissions from nitric acid production decreased by 4,579.09 Gg CO₂ eq (or by 69.7 per cent) and emissions from glyoxylic acid production decreased by 2,438.80 Gg CO₂ eq (or by 91.1 per cent).

62. Within the industrial processes sector, 42.1 per cent of the emissions were from consumption of halocarbons and SF₆, followed by 30.6 per cent from mineral products, 16.9 per cent from chemical industry, and 9.6 per cent from metal production. The remaining 0.7 per cent were from production of halocarbons and SF₆.

63. France has made recalculations for the industrial processes sector between the 2010 and 2011 submissions in response to the 2010 review report, following changes in AD and methodological changes, and in order to rectify identified errors. The impact of these recalculations on estimated total GHG emissions is a decrease in emissions of 0.02 per cent for 2008 and an increase in emissions of 0.1 per cent for 1990 (the impact on industrial processes emissions is a decrease in emissions of 0.3 per cent for 2008 and an increase in emissions of 1.2 per cent for 1990). The main recalculations took place in the following categories:

(a) Mineral products: CO₂ emissions from limestone and dolomite use. The recalculations were conducted due to updated AD following the incorporation of new sources that were previously unreported. These recalculations resulted in an increase in CO₂ emissions from limestone and dolomite use by 60.79 Gg CO₂ eq;

(b) Chemical industry: CO₂ emissions from ammonia production. The recalculations resulted in a decrease in CO₂ emissions by 8.94 Gg CO₂ eq for 2008 (see para. 71 below);

(c) Metal production: CO₂ emissions from ferroalloys production. In response to a recommendation in the previous review report, the AD were revised as new sites were identified and their emissions incorporated into the inventory (see para. 76 below). As a

result of the recalculations, CO₂ emissions from ferroalloys production increased by 101.60 Gg (or by 130.4 per cent) for 2008;

(d) Consumption of halocarbons and SF₆: actual HFC emissions from refrigeration and air-conditioning equipment and from aerosols/metered dose inhalers; actual SF₆ emissions from electrical equipment; and actual PFC emissions from other (open application). For refrigeration and air-conditioning equipment, the recalculations were performed due to an update of the country-specific methodology used (methodology developed by the Ecole des Mines de Paris). The recalculations resulted in a decrease in actual emissions from refrigeration and air-conditioning equipment by 291.39 Gg CO₂ eq (or by 2.8 per cent) for 2008. For aerosols/metered dose inhalers, the recalculations were conducted due to a revision of the emissions from one production site, and resulted in a decrease in emissions of 43.78 Gg CO₂ eq (or by 1.3 per cent) for 2008. For 2008, the recalculations of SF₆ emissions from electrical equipment resulted in a decrease in emissions of 14.01 Gg CO₂ eq (or by 3.2 per cent), and the recalculations of actual PFC emissions from other (open application) resulted in an increase in emissions of 5.7 Gg CO₂ eq (or by 300.0 per cent). As the NIR does not provide an explanation for the recalculations performed in the subcategories electrical equipment and other (open application), the ERT recommends that France include clear explanations for all recalculations in NIR of its next annual submission.

64. France has made recalculations for the solvent and other product use sector between the 2010 and 2011 submissions. The impact of these recalculations on total GHG emissions is an increase of 0.01 per cent (by 27.75 Gg CO₂ eq) for 2008 (the impact on emissions from the sector is an increase of 2.2 per cent) and a decrease in emissions of 0.0002 per cent (by 1.08 Gg CO₂ eq) for 1990 (the impact on emissions from the sector is a decrease in emissions of 0.05 per cent for 1990). The main recalculations took place in the following categories:

(a) CO₂ emissions from paint application. The recalculations led to an increase in CO₂ emissions from paint application by 9.73 Gg (or by 9.7 per cent) for 2008;

(b) CO₂ emissions from chemical products, manufacture and processing. The recalculations resulted in an increase in CO₂ emissions by 14.67 Gg (or by 14.9 per cent) for 2008.

65. The NIR reports that no recalculations were performed for the solvent and other product use sector, although recalculations were conducted for this sector. The ERT recommends that France report all recalculations and related information both in the NIR and in CRF table 8(b) in its next annual submission.

66. For the industrial processes sector, all the recalculations reported in the recalculation section of the NIR and in table 76 of the NIR are not documented or reported in CRF table 8(b), where only the categories and gases recalculated are reported, but no information is provided on the subcategories, methods or parameters, or on the rationale for the recalculations. The ERT recommends that France report all mandatory information regarding the recalculations, including justification for the recalculations performed, both in the NIR and in CRF table 8(b), in its next annual submission in order to be in accordance with paragraph 34 of the UNFCCC reporting guidelines.

67. France has improved its reporting on the industrial processes sector by considering new sources and revising the AD. However, because of the French legal requirements regarding confidentiality, many categories in France are confidential, and the AD and EFs are therefore not accessible. The ERT acknowledges the responsiveness of France to all questions raised as well as the clarifications received during the review. However, in the industrial processes sector, almost all emissions are estimated by the plants, with either country-specific or a plant-specific EFs, but the methodologies used are not always clearly

described in the NIR. To improve transparency, the ERT recommends that France report on all the methodologies used for the estimation of emissions and on all the specific QA/QC procedures in its next annual submission.

2. Key categories

Cement production – CO₂

68. Since 2008 onwards, France has used a tier 3 methodology to estimate emissions from many cement plants. The new methodology to estimate emissions from clinker production based on the carbonate content input material has been implemented so that the reporting is in line with the new French regulations on emission reporting. The ERT notes that the time series (1990–2009) is not consistent as required by the UNFCCC reporting guidelines and in line with the IPCC good practice guidance, as France has not recalculated the emissions from the cement plants for the period 1990–2007. The ERT recommends that France report the exact number of plants applying a tier 3 method and those still applying a tier 2 method, with the corresponding AD and EFs used, in order to increase transparency. The ERT reiterates the recommendation in the previous review report that France recalculate the previous emission estimates for the plants now using a tier 3 methodology for the entire time series in its next annual submission.

69. Although France reported specific EFs for the two cement types (alumina and Portland) in the NIR of its 2010 submission in response to a recommendation in the 2009 review report, France has reported only an aggregated EF for cement production in the NIR of its 2011 submission. Alumina cement production accounts for 3 per cent of the total cement production in France. To increase transparency, the ERT reiterates the recommendation of the 2009 review report that France report the EF and AD used to estimate emissions from this category disaggregated by cement type, and clarify the use of the tier 3 method in this category.

70. In the previous review report it was recommended that France provide more information on the consideration of cement kiln dust (CKD) and the dust collection and recycling systems in the 33 cement plants in the country. France has not provided additional information in its 2011 annual submission on this issue. The ERT reiterates the recommendation in the previous review report that France clarify the dust collection and recycling systems in the cement plants and the related consideration of CKD in the estimation of emissions in its next annual submission.

Ammonia production – CO₂

71. For the CO₂ IEF for ammonia production, the 24.2 per cent inter-annual increase between 2008 (1.47 t/t) and 2009 (1.82 t/t) is significant (23.8 per cent). In response to a question raised by the ERT during the review, France responded that AD and emissions are reported by each plant, and that the increase in the value of the CO₂ IEF between 2008 and 2009 is due to the decrease in the efficiency of the process as a result of the lower load factor of the plants. To increase transparency, the ERT recommends that France include this information in its next annual submission. The ERT also noted that the CO₂ emissions for 2008 have been recalculated, and that the recalculations resulted in a decrease in emissions of 8.94 Gg despite the fact that the production level had not changed. The ERT strongly recommends that France include information on this recalculation in its next annual submission.

Nitric acid production – N₂O

72. The ERT considers, similarly to the previous review report, that France is not reporting information on how it calculates the country-specific EFs in a transparent manner.

The ERT therefore reiterates the recommendation in the previous review report that France report in the NIR on the process technology used for each plant and the EFs aggregated by the two groups of plants (with and without N₂O destruction technology) in order to increase transparency in its next annual submission. The ERT also reiterates the recommendation in previous review reports that France report the production share of the seven plants where continuous measurements are made separately and indicate their share in the total nitric acid production in France.

Adipic acid production⁸ – CO₂ and N₂O

73. The NIR (page 130) reports an increase in the value of the CO₂ EF for 2009 by 50.0 per cent, but the corresponding CO₂ emissions increased by only 19.6 per cent between 2008 and 2009 (i.e. not following the same growth rate as the EF). In response to a question raised by the ERT during the review regarding the increase in the EF, France responded that the 20.0 per cent decrease in adipic acid production between 2008 and 2009 explains the difference between the increase in the value of the CO₂ EF and the increase in the CO₂ emissions.

74. However, the ERT considers that France's response does not clarify the sudden increase in the value of the CO₂ EF by 50.0 per cent, which is considered unusual and significant. The ERT cannot find a reason why the value of the CO₂ EF should increase when the production of adipic acid decreases, as the oxidation of feedstock decreases in parallel. In addition, adipic acid production has been decreasing since 2006 without any similar impact on the EFs, which remained constant until 2009. The ERT recommends that France confirm whether there is any change in the industrial process or in the methodology and parameters used to estimate the emissions, or any miscounting of CO₂ emissions, and to report in detail on its findings in its next annual submission.

75. The ERT noted that the methodology used to estimate the N₂O emissions from adipic acid production is not described in the NIR. In response to a question raised by the ERT during the review, France provided documentation on the methodology used (methodology BP X30-330 of the French Association of Normalization). The ERT considers that the methodology is in line with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance, but recommends that France include a description of this methodology in its next annual submission.

Ferroalloys production – CO₂

76. In its previous submission, France reported that not all emission sources for ferroalloys production were covered, as the survey to collect the relevant data was still ongoing. In response to a question raised by the ERT during the review related to the completeness of the emission sources considered, France responded that the survey has now been completed. To increase transparency, the ERT recommends that France report on the exact number of plants producing ferroalloys, the types of ferroalloys produced (if applicable, in percentage terms because of the confidentiality of this activity) and the production trend and AD for each type of ferroalloy since 1990 in its next annual submission.

77. The ERT noted that France has reported the AD and the CO₂ IEF for ferroalloys production for the entire time series 1990–2009 as confidential ("C") in CRF table 2(I)A–G. In response to a question raised by the ERT during the review, France explained that

⁸ Not all emissions related to all gases under this category are key categories, particularly CO₂ emissions. However, since the calculation procedures for issues related to this category are discussed as whole, the individual gases are not assessed in separate sections.

there is only one plant in its overseas territories, in Nouvelle Calédonie, and that this plant is included in the reporting under the Convention but not under the Kyoto Protocol. France also explained that as the other plants are reported under both the Convention and the Protocol, in accordance with confidentiality legislation the Party is not allowed to report figures both under the Convention and the Protocol. France indicated that it is evaluating to report figures for AD and CO₂ IEF under the Protocol and as “C” under the Convention. To improve transparency, the ERT recommends that France report the EF and AD for each ferroalloy type, while respecting confidentiality legislation, in its next annual submission.

Ozone-depleting substances (ODS) substitutes – HFCs, PFCs and SF₆

78. In the previous review report it was recommended that France increase the transparency of the information on the methodologies, assumptions, AD, EFs and QA/QC procedures for the estimation of emissions from refrigeration and air conditioning equipment. The ERT considers that the information about the model used is still not reported in the 2011 submission. The ERT reiterates the recommendation in the previous review report that France improve the transparency of the NIR by providing more recent information on the model used, including information on the assumptions used, data collection, QA/QC checks, model validation, and peer reviews in its next annual submission.

3. Non-key categories

Other (chemical industry) – CO₂, CH₄ and N₂O

79. In the CRF tables, the subcategory other non-specified reported under other (chemical industry) includes CO₂, CH₄ and N₂O emissions from the production of N₂O, uranium tetrafluoride, titanium tetrachloride and other chemicals. In response to a recommendation in the previous review report, France has provided additional information on the methodologies used to estimate these emissions (page 609 of the NIR), but has not reported on the QA/QC procedures applied. To increase transparency, the ERT encourages France to report on the QA/QC procedures applied in the NIR in its next annual submission.

80. In response to a question raised by the ERT during the review, France provided additional information on the methodology used by the plants to estimate N₂O emissions from the production of N₂O. The ERT considers that the methodology used by France is in line with the IPCC good practice guidance. The ERT recommends that France report this information on the methodology used by the plants to estimate N₂O emissions in its next annual submission.

81. In the NIR (page 132) France has reported the recalculations performed for the period 1990–2001 due to updated data from one N₂O production plant. The update relates to the recycling of N₂O emissions (100 t N₂O/year) that occurred in the plant during the period 1990–2000; as a result, the N₂O emissions from this subcategory for the period 1990–2000 have decreased by 0.10 Gg. The NIR does not provide information on why these N₂O emissions have not been recycled since 2001 or whether they are destroyed. In response to a question raised by the ERT during the review, France indicated that the emissions are currently emitted directly into the atmosphere, but the plant has plans to destroy these emissions in the future. To improve transparency, the ERT recommends that France include, in its next annual submission, all the explanations provided to the ERT during the review and report on the plans of the plant to destroy these N₂O emissions.

82. There is only one phthalic anhydride plant in the country. France has reported the production in the CRF tables under other (chemical industry) as confidential. The NIR reports that since 2002, data on emissions, production and EFs are provided every year by

the industrial plant. The ERT noted that, according to two different sources,⁹ France has the most important phthalic anhydride plant in the world, producing between 40 and 90 kt/year. No information is reported in the NIR regarding the EFs, AD or methodology used for the estimation of emissions. In response to a question raised by the ERT during the review, France indicated that, according to the industrial plant, the CO₂ EF and the carbon monoxide EF are considered constant between 1990 and 2001. To improve transparency, the ERT recommends that France report additional information on the methodology, AD and EFs used to estimate emissions from this category in its next annual submission.

D. Agriculture

1. Sector overview

83. In 2009, emissions from the agriculture sector amounted to 95,792.72 Gg CO₂ eq, or 18.5 per cent of total GHG emissions. Since 1990, emissions have decreased by 11.9 per cent. The key drivers for the fall in emissions are the decreases in N₂O emissions from agricultural soils by 9,540.65 Gg CO₂ eq (or by 17 per cent) and in CH₄ emissions from enteric fermentation by 2,583.45 Gg CO₂ eq (or by 8.1 per cent) due to the decrease in the quantity of synthetic fertilizer applied to agricultural soils, the reduction in the populations of dairy cattle and sheep and the increased efficiency of milk production from dairy cattle. Within the sector, 48.4 per cent of the emissions were from agricultural soils, followed by 30.8 per cent from enteric fermentation and 20.7 per cent from manure management. The remaining 0.1 per cent were from rice cultivation.

84. France has made recalculations for the agriculture sector between the 2010 and 2011 submissions following updates in the animal populations in New Caledonia and in order to rectify the EF for suckler cows. The impact of these recalculations on estimated total GHG emissions is an increase in emissions of 0.2 per cent for both 2008 and 1990 (the impact on emissions from the agriculture sector in an increase in emissions of 1.3 per cent for 2008 and of 1.0 per cent for 1990). The main recalculations took place in the following categories:

- (a) CH₄ emissions from enteric fermentation for the entire time series (see para. 91 below);
- (b) CH₄ and N₂O emissions from manure management for the period 2000–2008 (see para. 93 below);
- (c) N₂O emissions from agricultural soils for the period 1996–2008 (see para. 99 below).

85. The ERT noted that not all the recalculations in this sector have been reported (see paras. 93 and 99 below). The ERT recommends that France report on all recalculations and improve its QC activities for the reporting of recalculations in order to ensure consistency between the NIR and CRF table 8(a) in its next annual submission.

⁹ First source: Sénéchal J. 1995. *Origine et développement d'une industrie à Chauny. La glacière et la soudière*. Société académique d'histoire, d'archéologie, des arts et des lettres de Chauny et de sa région. Volume XL – 1995 of the Fédération des sociétés d'histoire et d'archéologie de l'Aisne. Available at http://www.histoireaisne.fr/memoires_numerises/chapitres/tome_40/Tome_040_page_057.pdf.
Second source: L'Usine de Chauny. Available at <http://dcnrko.pagesperso-orange.fr/topic4/index.html>.

86. The inventory is complete in terms of categories and gases; emission estimates have been provided for all years of the time series and no categories have been reported as “NE”. Emissions from prescribed burning of savannas and field burning of agricultural residues have been reported as not occurring (“NO”) (see para. 135 below). However, the ERT noted that France has reported in its NIR (page 181) that the incineration of agricultural residues occurs but the CH₄ emissions are reported in the waste sector. The ERT recommends that France report CH₄ and N₂O emissions from the burning of agricultural residues in the category field burning of agricultural residues or, if this is not appropriate, justify the different allocation in its next annual submission.

87. The ERT noted some issues related to a lack of transparency, such as the missing background information to support the methods used to estimate the country-specific CH₄ EFs for enteric fermentation (see para. 89 below) or the information on AD for agricultural soils (see para. 96 below). The ERT reiterates the recommendation in the previous review report that France provide additional information on the methods used to calculate the emissions in order to improve transparency, including detailed descriptions of the country-specific methods and the methods used to calculate the country-specific EFs and parameters.

88. France has estimated the uncertainties of the sector by category. The rationale for the choice of values of uncertainties of the AD and EFs (except agricultural soils) has not been provided in the NIR. To improve transparency, the ERT recommends that France provide this information in its next annual submission.

2. Key categories

Enteric fermentation – CH₄

89. France has used a country-specific tier 2 method to estimate CH₄ emissions from all animals, which is in line with the IPCC good practice guidance as enteric fermentation is a key category. A method from the Institut National de la Recherche Agronomique (INRA) has been used to develop the country-specific EFs based on the metabolizable energy derived from the characteristics of the French livestock systems (e.g. feeding, breeds and productivity level) and the methane conversion factor. However, this approach differs from the IPCC tier 2 approach, in particular because the methane conversion factor is based on the metabolizable energy, whereas in the IPCC approach it is based on the gross energy intake. The ERT reiterates the recommendation in the previous review report that France compare the EFs derived by the two methods (the country-specific method and the IPCC tier 2 method) and, depending on the results, re-evaluate the country-specific approach used in its next annual submission.

90. The ERT considers that the information reported in the NIR on the methodology used to derive the CH₄ emission estimates is not sufficient to enable comparability and replication, and therefore reiterates the recommendation in the previous review report that France improve the transparency of its reporting of the country-specific tier 2 method used for enteric fermentation.

91. The ERT noted some inconsistencies in the reporting of the recalculations between the NIR and CRF table 8(a). For example, the variation in the CH₄ emissions for 1990 due to the recalculation is reported as 7 per cent in the NIR and 3.6 per cent in CRF table 8(a). Moreover, France has reported in its NIR (page 152) the recalculation of CH₄ emissions for 2009, which is not possible as the emissions for 2009 were reported for the first time in the 2011 annual submission. In response to a question raised by the ERT during the review, France explained that the variations in the CH₄ emissions reported in the NIR refer to non-dairy cattle only, while the variations reported in CRF table 8(a) refer to all CH₄ emissions from enteric fermentation. With regard to the issue of the recalculations performed for

2009, France explained that this is a typographical error, and that the year should read “2008”. The ERT recommends that France improve the consistency and quality of its reporting by enhancing QC checks of the information reported in its next annual submission.

Manure management – CH₄ and N₂O

92. The default IPCC tier 1 method, including the default values for volatile solids (VS), was used to estimate CH₄ emissions from manure management. This is not in line with the IPCC good practice guidance since this category is key. As indicated in the previous review report, in response to a question France explained that INRA was working on the development of a methodology to estimate CH₄ emissions from manure management. However, during the review, in response to a question raised by the ERT, France explained that it had just launched a project to obtain country-specific VS values. The ERT strongly reiterates the recommendation in the previous review report that France use country-specific VS values consistent with the estimates of feed energy intake for enteric fermentation, taking into account possible changes in VS over time (e.g. due to changes in the milk yield and feeding practices), in its next annual submission.

93. With regard to the reporting of the recalculations for this category, the ERT noted that the NIR is not consistent with the CRF tables. The CRF tables showed slight differences in the emissions reported for the period 2000–2008 between the 2010 and 2011 submissions, but the NIR states that no recalculations have been performed for this category. The ERT recommends that France report on all recalculations in its next annual submission.

94. The ERT noted that France has used a tier 1 method with country-specific data (manure management system usage, enhanced livestock characterization) and default parameters (nitrogen (N) excretion rates and EFs) from the IPCC good practice guidance to estimate N₂O emissions from manure management. This is in line with the IPCC good practice guidance. Nevertheless, the ERT encourages France to enhance its method by using country-specific N excretion rates and EFs to estimate N₂O from manure management in its next annual submission. The ERT welcomes France’s efforts to improve the transparency of the NIR by providing the list of animal subclasses and the N excretion rates for each subclass used to estimate the N₂O emissions from manure management in response to a recommendation from the previous review report.

95. As regards the recalculations of N₂O emissions from manure management, the ERT noted the same inconsistencies as those identified for the recalculations of CH₄ emissions (see para. 93 above). The ERT recommends that France improve the consistency of its reporting of recalculations between the NIR and the CRF tables by enhancing its QC activities.

Agricultural soils – N₂O

96. France has indicated in the NIR that it uses a tier 1 method from the Revised 1996 IPCC Guidelines to estimate N₂O emissions from agricultural soils, without specifying whether the method is tier 1a or tier 1b. In response to a question raised by the ERT during the review, France indicated that it was a tier 1a method. The ERT recommends that France improve the transparency of its reporting of the method used for this category by indicating and justifying the type of tier 1 method used and including summary information on the equations used in its next annual submission. In response to a recommendation in the previous review report, France has included additional information on the sources of the EFs and parameters used, and the ERT commends France for improving the transparency of its reporting. However, the ERT considers that the information on AD is still insufficient, and therefore, to improve transparency, the ERT reiterates the recommendation in the

previous review report that France provide more information on AD in its next annual submission.

97. To estimate direct emissions from agricultural soils, France has used a value for the fraction of livestock N excreted and deposited onto soil during grazing ($\text{Frac}_{\text{GRAZ}}$) of 0.41 (CRF table 4.D). In response to a question raised by the ERT during the review, France explained that it estimated this parameter by dividing the total amount of N excreted during pasture by the total amount of N excreted. The ERT noted that, by using this method, France did not adjust the total amount of N excreted during pasture for the N that volatilizes. The ERT strongly recommends that France use the appropriate formula to calculate $\text{Frac}_{\text{GRAZ}}$ in its next annual submission.

98. The ERT noted that the value reported by France for the fraction of residue dry biomass that is N ($\text{Frac}_{\text{NCRO}}$), 0.009 kg N/kg, differs from the IPCC default value, 0.015 kg N/kg (table 4.19 of the Revised 1996 IPCC Guidelines), while a tier 1a method and default IPCC fractions have been used to estimate direct N_2O emissions from soils. In response to a question raised by the ERT during the review, France explained that it used country-specific data to calculate the value of $\text{Frac}_{\text{NCRO}}$, and provided the ERT with the relevant background information. To improve transparency, the ERT recommends that France provide this background information in its next annual submission.

99. With regard to the reporting of recalculations, the ERT noted an inconsistency between the NIR and the CRF tables. The CRF tables reveal slight differences between the emissions reported in the 2010 and 2011 submissions for the period 2000–2008, while the NIR states that no recalculations have been performed for this category. The ERT recommends that France report on all recalculations in its next annual submission.

100. The ERT commends France for addressing the recommendation from the previous review report that France describe the methodologies and data sources used to estimate N_2O emissions from the use of sewage sludge and compost spreading under the category other (direct emissions).

E. Land use, land-use change and forestry

1. Sector overview

101. In 2009, net removals from the LULUCF sector amounted to 63,920.45 Gg CO_2 eq and offset 12.4 per cent of the total GHG emissions. Since 1990, net removals have increased by 61.0 per cent. The main category contributing to this increase is forest land remaining forest land, where removals increased by 26,608.24 Gg CO_2 eq (or by 58.4 per cent). Within the sector, net removals of 79,486.34 Gg CO_2 eq were from forest land, followed by net removals of 6,123.14 Gg CO_2 eq from grassland and net emissions of 17,019.28 Gg CO_2 eq from cropland, 3,771.85 Gg CO_2 eq from settlements and 431.71 Gg CO_2 eq from other. Wetlands and other land accounted for net emissions of 293.23 Gg CO_2 eq and 172.97 Gg CO_2 eq, respectively.

102. France has made recalculations for the LULUCF sector between the 2010 and 2011 submissions in response to recommendations in the previous review report, following changes in AD and EFs and in order to rectify identified errors. The impact of these recalculations on estimated total GHG emissions including LULUCF is a decrease of 0.3 per cent for 2008 and of 1.1 for 1990 (the recalculations resulted in an increase in removals from the LULUCF sector of 2.0 per cent for 2008 and of 19.1 per cent for 1990). The main recalculations took place in the following categories:

- (a) CO_2 from forest land remaining forest land;
- (b) CO_2 from land converted to forest land;

- (c) CO₂ from land converted to grassland;
- (d) CO₂, CH₄ and N₂O from land converted to cropland;
- (e) CH₄ from settlements.

103. In section 7.5 and table 76 of the NIR, France has explained that the reasons for the recalculations in the LULUCF sector include: the inclusion of the dead wood stock in forests in mainland France and of CO₂ emissions from forest fires; the revised estimates of areas reported in the land-use matrices of 1990 and 2008; and the revision of the forest growth. However, France has not specified the rationale per category. To increase transparency, the ERT encourages France to report the rationale for the recalculations for each category and gas affected.

104. All of the key categories identified, apart from one, were for CO₂: forest land remaining forest land (level and trend); land converted to forest land (level); land converted to cropland (level); land converted to grassland (level and trend); and land converted to settlements (level and trend). In addition, CH₄ removal from forest soils is reported in category other because the inventory compilers did not find a suitable category for that reporting. These key categories were not reported in CRF table 7, which was left totally blank for all years (see para. 10 above).

105. The ERT noted that, in general, the transparency of the reporting is much better in the NIR of the 2011 submission than in the previous NIR. France's National Forest Inventory is appropriately referenced through the main body of the NIR, and the TERUTI-LUCAS land-use surveying system used for precisely surveying the various uses land is concisely and clearly presented. TERUTI-LUCAS is a statistical system based on annual questionnaires collected on sampling points spread all over the country. These points are georeferenced. Each point is visited by an inquirer who observes the occupation of the soil and its use. Finally all those questionnaires are compiled together with relevant information from a previous year to produce a land use and land-use change matrix for that year and the current one. Some recommendations from the previous review report have been addressed in the current NIR, including the inconsistent reporting of France's geographic locations (i.e. its conterminous area plus the areas of its overseas territories). In response to a question raised by the ERT during the review, France provided information on the definitive land area of the Party: the area covered by the LULUCF sector under the Kyoto Protocol is 638,123 km², which is the sum of the areas of conterminous France and some of its overseas territories (Guyana, Guadeloupe, Martinique, and La Réunion). The area reported under the Convention is larger than this because it comprises additional overseas territories. However, there are some recommendations from previous review reports still unaddressed (see paras. 108–111 below).

106. TERUTI-LUCAS, the system for the representation of land since 2005, has greatly improved the identification of land-use areas, although the collection of information on the stewardship of each of those land uses has not been extensively developed. France has identified the improvement of this system as one of its most important objectives. In this sense, France has addressed the recommendation in the previous review report on the suitability of the land representation system TERUTI-LUCAS for obtaining an adequate assessment of land use and management on deforested lands. In this regard, France has revised the previous data and improved the estimation of land areas, particularly those subjected to deforestation.

107. The following categories were reported as "NO": emissions and removals of CO₂ from cropland remaining cropland, grassland remaining grassland and wetlands remaining wetlands; direct N₂O emissions from N fertilization of forest land and other; N₂O emissions from drainage of forest soils and wetlands; CO₂ emissions from lime application on grassland; and CH₄ and N₂O emissions from wildfires in cropland, grassland and wetlands.

108. France has still reported in its 2011 annual submission some carbon pools (including mineral soils, living biomass and dead biomass in some subcategories under forest land, cropland, grassland, wetlands, settlements, and other land) as “NO” due to a lack of information, although in the previous review report it was recommended that France either report the estimates, report them as “NE”, or justify why they do not occur. In response to a question raised by the ERT during the review, France acknowledged that either the use of a different notation key (e.g. “NE”) or the provision of estimates using expert judgement would be more appropriate than the notation key “NO”. France also indicated that it would make relevant changes for the next annual submission, provided that administrative permission from the competent government agencies was given. The ERT reiterates the recommendation in the previous review report that France improve the completeness of reporting of these pools in its next annual submission.

109. France has also not reported (reported as “0”) the changes in the carbon pools for some categories, such as: mineral soils for wetlands and other land converted to forest land; and mineral soils for wetlands, settlements and other land converted to cropland or grassland. France has not provided explanations as to why it has not included estimates for these pools in its 2011 annual submission. In response to a question raised by the ERT during the review, France informed the ERT that the figure “0” will be substituted by the appropriate notation keys in its next annual submission. The ERT recommends that France improve the reporting of these pools in line with the improvements described by France during the review in its next annual submission.

110. France has also reported as “0” the carbon stock changes in some pools across different categories that are assumed to be unchanging or do not occur in the country, such as: organic soils for forest land remaining forest land and land converted to forest land; mineral soils and organic soils for cropland remaining cropland; organic soils for land converted to cropland; mineral and organic soils for grassland remaining grassland; and organic soils for land converted to grassland. The ERT notes that the use of the figure “0” is not in line with the UNFCCC reporting guidelines, except for the reporting of the carbon stock changes in living biomass when gains equal losses. The ERT reiterates the recommendation in the previous review report that France report the changes in these pools using the appropriate notation key (“NO”) for the next annual submission in accordance with the UNFCCC reporting guidelines.

111. In response to a question raised by the ERT during the review, France explained that the figure “0” will be replaced whenever feasible by notation keys in the next annual submission. France also explained that, in some cases, the figure “0” is reported because of missing data on different land-use categories (e.g. for wetlands, settlements and other lands for which the average carbon stocks are currently unknown and the emissions and removals are not estimated). Further, the NIR states that the available data are not suitable to describe the dynamics of soil carbon outside the domain of land-use changes. Currently, the soil carbon stock data are mean values that do not discriminate among agricultural practices and, therefore, are not fit for the estimation of carbon stocks relevant under some agricultural practices, such as tillage or fertilization. Data obtained from agricultural practices are too scarce to obtain fairly robust emission estimates for them. In response to a question raised by the ERT during the review, France indicated that it plans to improve the assessment of the carbon stocks in dead biomass, litter, and soil in the near future. The ERT encourages France to report on these improvements in its next annual submission, with a view to reporting estimates as soon as possible.

112. The transparency and readability of the NIR could have been enhanced through the provision, for example, of more detail on the approaches and equations used by France from the IPCC good practice guidance for LULUCF, or the provision of more complete

references for the sources of information. The ERT recommends that France address these issues in its next annual submission.

113. The reporting of this sector is generally complete in the sense that all categories are reported together with most of their corresponding carbon pools. All years of the time series (1990–2009) and all relevant French territories are covered. However, some carbon pools are not reported in accordance with the UNFCCC reporting guidelines (see paras. 107–111 above). There is some room for improvement regarding the reporting of changes in the soil carbon pool for forest land by providing information on the management practices applied to lands converted from forest land, and by providing estimates for those carbon pools that have not yet been reported or estimated. The ERT recommends that France make those improvements in order to improve the completeness of its next annual submission.

114. There are no major inconsistencies between the information reported in the NIR and in the CRF tables. The very small number of cases detected by the ERT were caused by mistakes regarding the handling of data (for instance, the total area of settlements reported in CRF table 5.E for 2009 (5,196.52 kha) and in the NIR (5,300.00 kha). In response to a question raised by the ERT during the review, France acknowledged that a mistake was made in reporting the area of settlements area); during the review France has stated that it will amend those errors by its next annual submission. The ERT recommends that France do so.

115. The inventory for the LULUCF sector uses tier 2 methods with country-specific parameters for all the categories and gases. The uncertainty of the sector was estimated at 30 per cent for the AD, and 50 per cent for the EFs, while the combined uncertainty was 58 per cent, although no uncertainty values for the AD and EFs for the individual categories were provided (see para. 23 above).

2. Key categories

Forest land remaining forest land – CO₂

116. For 2009, this category was a net sink of CO₂ equal to 73,294.75 Gg CO₂. This sink was 52.3 per cent larger than in 1990. Emissions of CH₄ and N₂O only arose from wildfires and controlled burning of biomass, and were relatively small (combined, 690.30 Gg CO₂ eq for 2009). France has used tier 2 and IPCC good practice guidance for LULUCF with country-specific parameters for the estimates of this category.

117. In response to a recommendation in the previous review report regarding the time dynamics of the dead organic matter (DOM) pool, for the estimation of emissions for 2009, France has modified the approach used to estimate the changes in the carbon stocks in the DOM pool for the years following exceptional events such as storms, namely a particularly devastating storm that occurred in 1999 in mainland France. For every year between 1999 and 2009, France has reported the individual annual changes. Except for 1999 and 2009, the change in the carbon stocks in the DOM pool represented a source of CO₂ because of the decay model used. For 2009, the net carbon stock changes in the DOM pool amounted to –10,572.91 Gg CO₂ eq (14.5 per cent of the current forest land remaining forest land sink). For the years outside of the period 1999–2009, the DOM pool was assumed to be unchanging (as assumed by the default tier 1 method of the IPCC good practice guidance for LULUCF) and was therefore reported as “NO”. France has described sufficiently the time dynamics of the dead biomass carbon stock in the NIR.

118. In response to a recommendation in the previous review report, France has provided in its NIR a schematic depiction of the utilization of wood collected for fuel, showing the approximate share of the various uses of the wood that is not included in the energy balance. This information is based on a study on the origins of firewood. The ERT

considers that this information satisfactorily addresses the recommendation in the previous review report.

119. France reports in the NIR that there are scarce forest data available for Guyana, Martinique and La Réunion to produce a meaningful picture of the evolution of forest carbon stocks. However, as the use of the local forest types is weak, France assumes that the harvests compensate the forest growth, but the ERT considers that this assumption is not sufficiently justified. The ERT therefore reiterates the recommendation in the previous review report that France either revise the estimates with data on actual biomass growth and removals or provide sufficient justification for this assumption, including supporting documentation, in the NIR of its next annual submission.

Land converted to cropland – CO₂

120. Grassland converted to cropland was the most frequent land-use conversion to cropland: it accounted for 91.3 per cent of the total land area converted to cropland in 2009. Forest land converted to cropland represented 3.2 per cent of the total converted land area. Emissions of CO₂, mostly from the change in soil carbon stocks, amounted to 14,371.79 Gg CO₂ eq, and were 3.5 per cent lower than the emissions reported for 1990. France has used tier 2 and IPCC good practice guidance for LULUCF with country-specific parameters for the estimates of this category.

121. For land converted to cropland, the area reported for 2009 in CRF table 5.B (3,815.98 kha) is 6.2 per cent larger than the area reported in CRF table 5(III) (3,593.94 kha). The ERT reiterates the recommendation in previous review reports that France resolve this inconsistency in its next annual submission.

Grassland – CO₂

122. Cropland converted to grassland was the most frequent land-use conversion to grassland: it accounted for 76.4 per cent of the total land area converted to grassland in 2009. Forest land converted to grassland represented 9.7 per cent of the total converted land area. For 2009, removals of CO₂ (6,248.79 Gg CO₂ eq) were 38.9 per cent less than for 1990 (10,229.98 Gg CO₂ eq). The removals were mostly driven by the change in soil carbon stocks. For 2009, the emissions of CH₄ and N₂O taken together were 22.44 Gg CO₂ eq, of which 9.2 per cent were emissions of N₂O and 90.8 per cent of CH₄ from the controlled burning of forest land converted to grassland. France has used a tier 2 method and IPCC good practice guidance for LULUCF with country-specific parameters for the estimates for this category.

123. In response to a recommendation in the previous review report, France has reported new area estimates for grassland remaining grassland and land converted to grassland in the NIR. The average proportion between land converted to grassland and total grassland is 27.0 per cent for the period 1990–2009, compared with the unusually high range (between 70.3 per cent and 41.3 per cent) provided in the previous annual submission. The ERT commends France for increasing the accuracy of the estimates of the areas of grassland remaining grassland and lands converted to grassland.

Land converted to settlements – CO₂

124. Together, grassland and cropland represented 87.6 per cent of the total area converted to settlements in 2009. However, France reported the carbon stock changes for these land-use changes as “NO”. The ERT recommends that France report estimates for the carbon stock changes for these land-use changes or provide justification that they do not occur. Forest land converted to settlements accounted for 10.0 per cent of the total converted land area, and the corresponding CO₂ emissions, mostly from changes in the

carbon stocks of living biomass and, to a lesser degree, of mineral soils, amounted to 3,713.42 Gg CO₂ eq; the CH₄ and N₂O emissions were reported as “NO” for all subcategories under land converted to settlements. The CO₂ emissions for 2009 were 58.8 per cent higher than for 1990. France has used a tier 2 method and IPCC good practice guidance for LULUCF with country-specific parameters for the estimates of this category.

125. For 2009, France has reported different figures for the total area of settlements in CRF table 5.E (5,196.52 kha) and in the NIR (5.3 Mha). The ERT reiterates the recommendation in the previous review report that France resolve this inconsistency in its next annual submission.

F. Waste

1. Sector overview

126. In 2009, emissions from the waste sector amounted to 21,981.82 Gg CO₂ eq, or 4.2 per cent of total GHG emissions. Since 1990, emissions have increased by 66.3 per cent. The key driver for the rise in emissions is the growing amount of managed solid waste, which increased from about 30 Mt in 1990 to 46 Mt in 2009, increasing the associated CH₄ emissions from managed waste disposal sites by 10,755.79 Gg CO₂ eq (or by 208.2 per cent) in the period 1990–2009. In addition, emissions from compost production increased by 355.28 Gg CO₂ eq (or by 341.5 per cent) and, due to the growing population connected to septic systems, emissions from domestic and commercial wastewater increased by 144.64 Gg CO₂ eq (or by 7.0 per cent). Within the sector, 77.7 per cent of the emissions were from solid waste disposal on land, followed by 10.7 per cent from wastewater handling, 9.5 per cent from waste incineration and 2.1 per cent from other (waste), which includes compost production and biogas production.

127. France has made recalculations for the waste sector for all subcategories between the 2010 and 2011 submissions in response to recommendations in the previous annual review report and following updates in AD and EFs. The impact of these recalculations on estimated total GHG emissions is an increase in emissions of 1.9 per cent for 2008 and of 0.1 per cent for 1990 (the impact on the waste sector is an increase in emissions of 88.5 per cent for 2008 and of 4.8 per cent for 1990). The main recalculations took place in the following categories:

(a) Solid waste disposal on land: for 2008, the recalculations resulted in an increase in CH₄ emissions of 10,166.82 Gg CO₂ eq (or by 148.1 per cent) compared with the previous annual submission;

(b) Wastewater handling: for 2008, the recalculations resulted in a decrease in CH₄ emissions of 101.57 Gg CO₂ eq (or by 7.8 per cent) and an increase in N₂O emissions of 192.53 Gg CO₂ eq (or by 20.0 per cent) compared with the previous annual submission;

(c) Waste incineration: for 2008, the recalculations resulted in a decrease in CO₂ emissions of 119.00 Gg (or by 7.5 per cent), an increase in CH₄ emissions of 24.35 Gg CO₂ eq (or by 13.6 per cent) and an increase in N₂O emissions of 13.42 Gg CO₂ eq (or by 17.0 per cent) compared with the previous annual submission;

(d) Other (waste): for 2008, the recalculations resulted in a decrease in CH₄ emissions of 22.21 Gg CO₂ eq (or by 15.9 per cent) and a decrease in N₂O emissions of 26.00 Gg CO₂ eq (or by 7.7 per cent) compared with the previous annual submission.

128. France has provided explanations for these recalculations in annex 6 to the NIR. The explanations provided by the Party address all categories and gases for which recalculations were performed in the waste sector. These recalculations are discussed in more detail in the category-specific sections of this report (see paras.132, 134, 135 and 137 below).

129. The emission estimates provided by France for the waste sector are considered to be complete; all relevant CRF categories and gases have been estimated. France has estimated the gases for which methodologies exist in the Revised 1996 IPCC Guidelines or in the IPCC good practice guidance. France has also estimated some gases or categories using the *EMEP/CORINAIR Emission Inventory Guidebook*¹⁰ or country-specific parameters for which no IPCC parameters are available (e.g. N₂O emissions from industrial wastewater, CH₄ and N₂O emissions from compost production or biogas production, or emissions from the burning of plastic films used on agricultural soils) and the ERT commends France for including them.

130. The ERT commends France for providing an improved overview of the institutional arrangements for the waste sector and the French waste fluxes, which enhances the understanding of the emission estimates.

2. Key categories

Solid waste disposal on land – CH₄

131. France uses a tier 2 methodology to estimate CH₄ emissions from solid waste disposal on land. National statistics and survey data were used along with country-specific EFs. Altogether, 95 per cent of the waste landfilled in France is disposed in landfills equipped with CH₄ recovery systems. In the previous review report it was concluded that the documentation provided by France was insufficient to support the high estimates for CH₄ recovery (80.0 per cent), hence the previous ERT considered the estimate of CH₄ recovered to be overestimated and adjusted the value.

132. In the previous review report it was recommended that France start to gather measured data on landfill gas captured in French landfills, and report those data in the following annual submission. France was not able to implement this recommendation for the 2011 annual submission and the CH₄ recovery is reported as “NO” (i.e. the CH₄ emissions from solid waste disposal on land are overestimated). In the annual submissions in 2012 and 2013, France plans to revise this estimation and collect data on the amount of landfill gas captured and used for energy purposes or flared, using questionnaires completed by all operating and closed landfills with CH₄ recovery systems. From 2014 onwards, France foresees the inclusion of this information in the regular statistical data collection from landfill operators. The ERT encourages France to continue to implement these plans in its next annual submission in accordance with the recommendations from the 2010 review.

133. The values of the CH₄ IEF for unmanaged, shallow landfill sites for the period 2006–2009 (ranging from 54,665 Mt/t to 67,902 Mt/t) are 10 orders of magnitude higher than the values for the period 1990–2005 (ranging from 0.02 t/t to 1.96 t/t) and higher than the values of all other reporting Parties for all years. In response to a question raised by the ERT during the review, France explained that these variations arise from the fact that no unmanaged solid waste disposal occurs after 2005, and France uses a fictitious, very small AD value that leads to such a high IEF. The ERT recommends that France use the notation key “NO” for the AD on unmanaged waste disposal in future inventories, thereby describing the activity in a more appropriate way and continue reporting the corresponding CH₄ emissions.

¹⁰ European Environment Agency, 2007.

Wastewater handling – CH₄

134. For the estimation of CH₄ emissions from domestic wastewater treatment, France has revised the number of domestic and commercial connections to the public wastewater system (for N₂O emissions, see para. 137 below). For 2008, this change led to a decrease in CH₄ emissions from domestic and commercial wastewater of 8.2 per cent compared with the previous annual submission. For emissions from industrial wastewater treatment, the number of treatment plants using natural lagoons was increased, resulting in an increase in CH₄ emissions from industrial wastewater by 0.4 per cent for 2008.

Waste incineration – CO₂

135. The emissions reported in the waste incineration category are emissions from the incineration of municipal solid waste without energy recovery, the incineration of sludge in wastewater treatment plants, the incineration of hazardous industrial wastes, the burning of plastic foils in agriculture, the burning of crop residues (see para. 86 above), the incineration of hospital wastes, and the cremation of corpses. The recalculations performed were due to updated AD for the categories biogenic and other (non-biogenic). Another revision was conducted to take into account the fact that not all agricultural wastes previously reported under waste incineration were actually burnt. In this category, according to the NIR (page 181) France has included CH₄ and N₂O emissions from the burning of agricultural residues, whereas France has reported the burning of agricultural residues as “NO” in the agriculture sector. The ERT recommends that France allocate the emissions from the burning of agricultural residues to the corresponding category in the agriculture sector if the burning of these residues takes place on the on agricultural fields, or improve the explanation as to why these emissions are not reported under the category field burning of agricultural residues.

136. The previous review report recommended that France improve its QC checks for this category. Some additional checks have been documented in the NIR and the data inconsistencies detected in the 2010 submission have been resolved in the 2011 annual submission. The ERT commends France for these improvements.

3. Non-key categoriesWastewater handling – N₂O

137. For the estimation of N₂O emissions from domestic wastewater treatment, France has revised the number of household connections to the public wastewater system as well as the daily protein consumption of the population. For the N₂O emissions from domestic and commercial wastewater, this revision resulted in an increase in emissions of 21.9 per cent for 2008. The protein consumption values are consistent with information from the Food and Agriculture Organization of the United Nations on protein consumption for the complete time series.

138. In the previous review report it was recommended that France provide the AD and formulae used to estimate the N₂O emissions for industrial wastewater in the NIR. In its 2011 annual submission, France has explained the method used in annex 3 to the NIR. The N charge of wastewater is used as the AD, because the N charge is considered to be more reliable AD than the total organic product as required in the CRF table.

Other (waste) – CH₄ and N₂O

139. Under the category other (waste), France reports CH₄ and N₂O emissions from compost production and CH₄ emissions from biogas production. Following the recommendations in the previous review report, France has reported the time series of the

AD and EFs for compost production and biogas production separately in annex 3 to the NIR (sections 6D1 – compost, and 6D2 – biogas), which has increased the transparency of the NIR. The EFs for these subcategories (for compost, a CH₄ EF of 0.952 g/kg and an N₂O EF for every year, ranging from 0.162 g/kg to 0.199 g/kg; for biogas, a CH₄ EF of 2.678 g/kg), for which no methodologies are available in either the Revised 1996 IPCC Guidelines or the IPCC good practice guidance, are within the range of the EFs provided in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (volume 5, table 4.1, on a dry weight basis: for composting, a CH₄ EF range of 0.08–20 g/kg and an N₂O EF range of 0.2–1.6 g/kg; for biogas, a CH₄ EF range of 0–20 g/kg) and similar to the EFs of other reporting Parties.

140. The ERT noted that, according to the NIR (page 806), the biogas produced is used on-site or injected into the natural gas network. The ERT also noted that the CH₄ emissions reported for biogas production under other (waste) are leaks from the process to produce biogas. The ERT therefore recommends that France revise the allocation of these emissions and report them under the fugitive emissions in the energy sector.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

141. France has submitted estimates for afforestation, reforestation and deforestation activities under Article 3, paragraph 3, of the Kyoto Protocol and for the elected activity forest management under Article 3, paragraph 4, of the Kyoto Protocol. France has chosen to account for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol annually.

142. France has selected and applied inventory methodologies in accordance with the IPCC good practice guidance for LULUCF, in line with the requirements set out in the annex to decision 15/CMP.1.

143. The use of the TERUTI-LUCAS surveying system (see para. 105 above) ensures the location of the boundaries that demarcate the lands of all the mandatory and elected KP-LULUCF activities. The area under the Kyoto Protocol is made up of the area of conterminous France and the areas of the overseas territories that are part of the European Union (EU). France has opted for reporting on a regionally administrative basis (22 mainland regions plus four overseas regions). Those areas are clearly identified, in accordance with the requirement set out in paragraph 6(b) of the annex to decision 15/CMP.1.

144. The parameters chosen by France defining a forest are: a minimum area of 0.5 ha; 10 per cent minimum land cover; and a minimum height of 5 m. The spatial assessment unit chosen, in accordance with the requirement set out in paragraph 6(c) of the annex to decision 15/CMP.1, is the administrative region (see para. 143 above).

145. In line with the requirement set out in paragraph 6(e) of the annex to decision 15/CMP.1, the carbon pools have been reported, except soil and dead biomass in lands under forest management activities, which are assumed to be unchanging. Regarding these assumptions, the NIR makes reference to some experimental data that indeed show that the growth of those carbon pools is closely related to the growth of biomass, but, as a result of the scarcity of data, France has assumed that carbon stocks in these pools did not change with time, thereby assuming the dynamics of carbon in each of those pools to be zero, as in

the tier 1 method of the Revised 1996 IPCC Guidelines. However, France has not reported verifiable information that demonstrates that these unaccounted pools were not a net source of GHG emission. The ERT therefore strongly recommends that France report this information in its next annual submission.

146. France has not reported uncertainties for each of its mandatory and elected activities. The ERT recommends that France report on these uncertainties in its next annual submission.

147. France has not completed table NIR-3. The ERT reiterates the recommendation in the previous review report that France identify which activities are key categories and for which gases, and report thereon in table NIR-3 in its next annual submission. The key category analysis performed by the secretariat has identified afforestation/reforestation, deforestation and forest management as key categories for CO₂ emissions.

148. France plans to complete its land-use transition matrices for time periods beginning in 1990 and extending to each year of the commitment period (France has already reported in the NIR the matrices for the periods 1989–2009 and 2008–2009).

149. Regarding the requirement set out in paragraph 7 of the annex to decision 15/CMP.1, the NIR states that the land representation system TERUTI, which is used to estimate the changes in the dynamics of carbon, does not lend itself to distinguish “natural” or “indirect” effects from anthropogenic effects in managed lands. Therefore, natural and anthropogenic effects are reported together in the national inventory. Regarding the requirement set out in paragraph 8(a) of the annex to decision 15/CMP.1 France has reported in its NIR that activities under Article 3, paragraph 3, of the Kyoto Protocol were identified in 1990 and afterwards by means of enquiries collected by the predecessors of the TERUTI-LUCAS system (see para. 105 above) in metropolitan France. A system based on teledetection was used in the French Overseas Territories for the same task.

150. France has made recalculations for the KP-LULUCF activities between the 2010 and 2011 submissions in response to the recommendations in the previous annual review report, following changes in AD and the revision of the carbon stocks lost from deforestation and in order to rectify identified errors. The impact of these recalculations on each KP-LULUCF activity for 2008 is as follows:

- (a) Net removals from afforestation and reforestation decreased by 963.80 Gg (or by 12.6 per cent);
- (b) Net emissions from deforestation decreased by 936.64 Gg (or by 7.4 per cent);
- (c) Net removals from forest management decreased by 5,586.78 Gg CO₂ eq (or by 6.7 per cent).

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO₂

151. In 2009, this activity was a net sink of 6,897.86 Gg CO₂ eq (an increase of 2.8 per cent compared with 2008). For biomass burning, table NIR-1 indicates that the CO₂, CH₄ and N₂O emissions have been reported, but biomass burning is reported as not applicable (“NA”) in CRF table 5(KP-II)5 and as “NO” in CRF table 5(V). In response to a question raised by the ERT during the review, France explained that CH₄ emissions from biomass burning essentially originate from on-site burning after harvesting, yet it is assumed that there is no harvest on forest younger than 20 years, and, therefore, no harvest on afforested areas took place in 2008 and 2009. France also responded that using the notation key “NO” in CRF table 5(KP-II)5 could possibly be more accurate. The ERT recommends that France

improve the consistency and transparency of the reporting of biomass burning under afforestation and reforestation in its next annual submission.

Deforestation – CO₂

152. In 2009, this activity was a net source of 10,106.63 Gg CO₂ eq (a decrease of 13.8 per cent compared with 2008). TERUTI, the system used for land representation for 1982–2004, differentiates between use and occupation in a patch of land, thus allowing harvested areas to be distinguished from deforested areas, as required by paragraph 8(b) of the annex to decision 15/CMP.1.

153. France has appropriately reported the lands deforested in both 2008 and 2009, in accordance with paragraph 6(d) of the annex to decision 15/CMP.1, thereby addressing the recommendation in the previous review report that France report separately the emissions from lands deforested in the first year of the commitment period from those from lands deforested in previous years.

154. For 2009, the ERT noted that the reported area of forest land converted to cropland (deforestation) in CRF table 5(KP-II)3 (547.48 kha) is about two and a half times larger than the area of forest land converted to cropland reported in CRF tables 5.B and 5(III) (123.16 kha), but the N₂O emissions reported are the same in both cases (0.17 Gg). The ERT strongly recommends that France revise its estimates and/or explain the use of the different EFs in those cases in its next annual submission.

Activities under Article 3, paragraph 4, of the Kyoto Protocol

Forest management – CO₂

155. In 2009, forest management was a net sink of 72,172.84 Gg CO₂ eq (a decrease of 7.8 per cent compared to 2008). Forest management activities began on or after 1 January 1990, and changes in the stocks of the carbon pools were consequence of silvicultural practices performed on managed forests. The areas under forest management were statistically estimated on the basis of a regional rate of managed forests. Therefore, the area under forest management differs from the area of forests remaining forests under the Convention. The methods used for estimating the changes in stocks of carbon pools for the Convention were the same as for the Kyoto Protocol. Relevant information is provided in the NIR in accordance with the requirement set out in paragraph 9(a) of the annex to decision 15/CMP.1.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

156. France has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 14/CMP.1 and 15/CMP.1. The ERT took note of the findings included in the SIAR on the SEF tables and the SEF comparison report.¹¹ The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings contained in the SIAR.

157. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with chapter I.E of the annex to decision 15/CMP.1, and reported in

¹¹ The SEF comparison report is prepared by the ITL administrator and provides information on the outcome of the comparison of data contained in the Party's SEF tables with corresponding records contained in the ITL.

accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements set out in paragraph 88(a–j) of the annex to decision 22/CMP.1. The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. Information reported by the Party on records of any discrepancies and on any records of non-replacement was found to be consistent with information provided to the secretariat by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol

158. France has reported information on its accounting of KP-LULUCF in the accounting table, as included in the annex to decision 6/CMP.3. Information on the accounting of KP-LULUCF has been prepared and reported in accordance with decisions 16/CMP.1 and 6/CMP.3. France submitted a revised accounting table on 9 September 2011, where the accounting value for the offset for forest management changed from 0 t CO₂ eq to –8,223,327 t CO₂ eq. This change affected the accounting value for forest management (see table 4 below).

159. Table 4 shows the accounting quantities for KP-LULUCF as reported by France and the final values after the review.

Table 4

Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO₂ eq

Activity	2011 submission ^a			2010 submission ^b	“Net” accounting quantity ^c
	As reported	Revised estimates	Final	Final	
Afforestation and reforestation	–13 611 348	–13 611 348	–13 611 348	–7 677 292	–5 934 056
Deforestation	21 834 675	21 834 675	21 834 675	12 664 693	9 169 982
Forest management	–16 133 333	–24 356 661	–24 356 661	–16 133 333	–8 223 327
Article 3.3 offset ^d	0	–8 223 327	–8 223 327	0	–8 223 327
Forest management cap ^e	–16 133 333	–16 133 333	–16 133 333	–16 133 333	–16 133 333
Cropland management	NA	NA	NA	NA	0
Grazing land management	NA	NA	NA	NA	0
Revegetation	NA	NA	NA	NA	0

Abbreviations: CRF = common reporting format, GHG = greenhouse gas, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable.

^a The values included under the 2011 submission are the cumulative accounting values for 2008 and 2009 as reported in the accounting table of the KP-LULUCF CRF tables for the inventory year 2009.

^b The values included under the 2010 submission are the final accounting values as a result of the 2010 review and are included in table 5 of the 2010 annual review report (FCCC/ARR/2010/FRA, page 44).

^c The “net” accounting quantity is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2011 submission and where the quantities issued or cancelled based on the 2010 review have been subtracted (“net” accounting quantity = final 2011 – final 2010).

^d Article 3.3 offset: For the first commitment period, a Party included in Annex I that incurs a net source of emissions under the provisions of Article 3, paragraph 3, may account for anthropogenic GHG emissions by sources and removals by sinks in areas under forest management under Article 3, paragraph 4, up to a level that is equal to the net source of emissions under the provisions of Article 3, paragraph 3, but not greater than 9.0 megatonnes of carbon times five, if the total anthropogenic GHG emissions by sources and removals by sinks in the managed forest since 1990 is equal to, or larger than, the net source of emissions incurred under Article 3, paragraph 3.

^e In accordance with paragraph 11 of the annex to decision 16/CMP.1, for the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, after the application of paragraph 10 of the annex to decision 16/CMP.1 and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix of the annex to decision 16/CMP.1, times five.

160. Based on the information provided in table 4 for the activity afforestation/reforestation, France shall issue 5,934,056 removal units in its national registry.

161. Based on the information provided in table 4 for the activity deforestation, France shall cancel 9,169,982 assigned amount units, emission reduction units and/or certified emission reduction units in its national registry.

162. Based on the information provided in table 4 for the activity forest management, France shall issue 8,223,327 removal units in its national registry.

National registry

163. The ERT took note of the SIAR and its finding that the reported information on the national registry is complete and has been submitted in accordance with the annex to decision 15/CMP.1. The ERT further noted from the SIAR and its finding that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1. The national registry also has adequate security, data safeguard and disaster recovery measures in place and its operational performance is adequate.

Calculation of the commitment period reserve

164. In the NIR submitted on 11 April 2011, France reported its commitment period reserve to be 2,536,088,000 t CO₂ eq based on the national GHG emissions in its most recently reviewed inventory. The ERT disagreed with this figure because the value of the Annex A emissions used by France in the calculation of its commitment period reserve (507,217,600 t CO₂ eq) is slightly different from the value of the Annex A emissions reported for 2009 in the CRF tables submitted on 11 April 2011 (507,217,596 t CO₂ eq). The ERT considers that the commitment period reserve based on the 11 April 2011 annual submission is 2,536,087,980 t CO₂ eq.

165. France submitted revised emission estimates on 12 May 2011. In these estimates, Annex A emissions for 2009 amount to 517,247,888 t CO₂ eq. The ERT noted that five times Annex A emissions equals 2,586,239,439 t CO₂ eq, and that this value is higher than 2,537,663,976 t CO₂ eq (90.0 per cent of the assigned amount). On 1 August 2011, France submitted a corrigendum to its NIR. In the corrigendum, France reported that its commitment period reserve has not changed since the initial report review (2,537,663,976 t CO₂ eq) as it is based on its assigned amount and not on the most recently reviewed inventory. The ERT agrees with this figure. However, the ERT noted that the explanations provided by the Party in the corrigendum to its NIR were inconsistent, as France reported that the commitment period reserve was based both on the latest submitted inventory and on the assigned amount. The ERT recommends that France improve the consistency of the information in its next NIR.

3. Changes to the national system

166. France reported on the changes to its national system since the previous annual submission: the ministry with overall responsibility for the national inventory, formerly the Ministère de l'Écologie, de l'Énergie, du Développement Durable et de la Mer, became MEDDTL; and two members of GCIIE changed their scope: the Ministère de l'Agriculture, de l'Alimentation et de la Pêche became the Ministère de l'Agriculture, de l'Alimentation, de la Pêche, de la Ruralité et de l'Aménagement du Territoire; and the Ministère de l'Economie de l'Industrie et de l'Emploi became the Ministère de l'Economie, des Finances et de l'Industrie. In addition, the contact person for the single national entity responsible for the inventory was changed to Ms. Frédérique Millard from the Direction Générale Energie et Climat of MEDDTL. The ERT concluded that France's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

167. France reported on the changes to its national registry since the previous annual submission: a new registry software version (5.0) was released in 2010 to cover the requirements in the amended EU legislation; and significant changes have been made to increase the level of security for the user authentication process. The ERT concluded that France's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

5. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

168. France has reported information on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. In response to a recommendation in the previous review report, the information was extended and restructured to follow more closely the reporting requirements of paragraph 24 of chapter I.H of the annex to decision 15/CMP.1. The ERT concludes that the information provided is complete and transparent.

169. France has extended and updated the information, including financial resources for 2009 and 2010 for bilateral and multilateral cooperation on climate change and an agreement with Kuwait on sustainable development signed in 2010.

III. Conclusions and recommendations

170. France made its annual submission on 11 April 2011. The annual submission contains the GHG inventory (comprising CRF tables and an NIR) and supplementary information under Article 7, paragraph 1, of the Kyoto Protocol (information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol; Kyoto Protocol units; changes to the national system and the national registry; and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol). This is in line with decision 15/CMP.1. France submitted CRF tables with revised estimates on 12 May 2011 and on 9 September 2011. France also submitted a corrigendum to its NIR on 12 May 2011 and on 1 August 2011.

171. The ERT concludes that the inventory submission of France has been prepared and reported in accordance with the UNFCCC reporting guidelines, except for the reporting of some carbon pools (see paras. 108, 109, 110, 124 and 145 above). The inventory

submission is complete and France has submitted a complete set of CRF tables for the years 1990–2009 and an NIR; these are complete in terms of geographical coverage, years and sectors, as well as complete in terms of categories and gases.

172. The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1, except completing table NIR-3 and the reporting of biomass burning under afforestation and reforestation (see paras. 147 and 151 above).

173. France's inventory is in line with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, except for the allocation of fuel combustion and fugitive emissions from petroleum refining (see para. 59 above) and of fugitive emissions from biogas (see para. 140 above), and the estimation of CH₄ emissions from manure management (see para. 92 above).

174. France has performed recalculations for the inventory between the 2010 and 2011 submissions in response to recommendations in the 2010 annual review report, in order to lift applied adjustments, following changes in AD and EFs and in order to rectify identified errors. The impact of these recalculations on the total GHG emissions is a decrease in emissions of 0.1 per cent for 1990 and an increase in emissions of 2.1 per cent for 2008. The main recalculations took place in the following categories:

- (a) CO₂ emissions from manufacturing industries and construction (see para. 52 above);
- (b) CH₄ emissions from enteric fermentation (see para. 91 above);
- (c) CO₂ emissions and removals from forest land and grassland (see paras. 102 and 103 above);
- (d) CH₄ emissions from solid waste disposal on land (see para. 132 above).

175. France has reported information on activities under Article 3, paragraph 3, of the Kyoto Protocol and the elected activity under Article 3, paragraph 4, of the Kyoto Protocol in accordance with decisions 15/CMP.1 and 16/CMP.1, except completing table NIR-3 and the reporting of biomass burning under afforestation and reforestation and of some carbon pools (see paras. 108, 109, 110, 111 and 147 above). The ERT considers that the arrangements in the national system enable an accurate estimation of the areas of forest land, which is the most relevant land-use category for the purposes of accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. However, the ERT identified some problems in the identification of other LULUCF and KP-LULUCF areas (see paras. 121, 125, 151 and 154 above).

176. France has made recalculations for the KP-LULUCF activities between the 2010 and 2011 submissions in response to the 2010 annual review report, following changes in AD and in order to rectify identified errors. The impact of these recalculations on each KP-LULUCF activity for 2008 is as follows:

- (a) Net removals from afforestation and reforestation decreased by 963.80 Gg CO₂ eq (or by 12.6 per cent);
- (b) Net emissions from deforestation decreased by 936.64 Gg CO₂ eq (or by 7.4 per cent);
- (c) Net removals from forest management decreased by 5,586.78 Gg CO₂ eq (or by 6.7 per cent).

177. France has reported information on its accounting of Kyoto Protocol units in accordance with chapter I.E of the annex to decision 15/CMP.1, and used the required reporting format tables as required by decision 14/CMP.1.

178. The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1.

179. The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions.

180. France has reported information under chapter I.H of the annex to decision 15/CMP.1, “Minimization of adverse impacts in accordance with Article 3, paragraph 14” as part of its 2011 annual submission. In response to a recommendation in the previous review report, the information was extended and restructured to follow more closely the reporting requirements of paragraph 24 of chapter I.H of the annex to decision 15/CMP.1. The information is complete and transparent.

181. The ERT identifies the following cross-cutting issues for improvement:

- (a) The uncertainty analysis (see paras. 23 and 25 above);
- (b) The transparency and completeness of the information on the key categories analysis and recalculations, including the completion of CRF tables 7, 8(b) and NIR-3 (see paras. 10–12, 22, and 27–29 above);
- (c) The use of tier 2 QC procedures for categories estimated with non-tier 1 methods and the description of these procedures (see para. 31 above);
- (d) The transparency of the structure of the NIR and the transparency and consistency between the NIR and the CRF tables regarding the geographical scope of the information reported (see paras. 32 and 33 above).

182. In the course of the review, the ERT formulated a number of recommendations relating to the transparency of the information and methodologies used in France’s annual submission. The key recommendations are that France:

- (a) Improve its description of the national system (see para. 18 above);
- (b) Improve the information on feedstocks and non-energy use of fuels (see para. 49 above);
- (c) Use country-specific CO₂ EFs for diesel and gasoline used in road transportation (see para. 56 above);
- (d) Reallocate fuel combustion and fugitive emissions from petroleum refining in accordance with the Revised 1996 IPCC Guidelines (see para. 59 above);
- (e) Increase the transparency of the methodologies used in the industrial processes sector (see para. 67 above) and in the agriculture sector (see para. 87 above);
- (f) Increase the transparency of the estimates from cement production (see paras. 68, 69 and 70 above), ammonia production (see para. 71 above), nitric acid production (see para. 72 above), ferroalloys production (see paras. 76 and 77 above) and refrigeration and air conditioning (see para. 78 above);
- (g) Improve the transparency and completeness of the information on the CO₂ EF for, and the methodology to estimate N₂O emissions from, adipic acid production (see paras. 74 and 75 above), and on emissions from production of N₂O (see paras. 80 and 81 above) and phthalic anhydride (see para. 82 above);
- (h) Review the allocation and increase the transparency of the information on emissions from the burning of agricultural residues (see para. 86 above);

- (i) Use country-specific values in the estimation of CH₄ emissions from manure management (see para. 92 above);
- (j) Improve the transparency of the AD for agricultural soils (see para. 96 above);
- (k) Revise the calculation of Frac_{GRAZ} for agricultural soils (see para. 97 above);
- (l) Improve its reporting of carbon pools (see paras. 108, 109, 110, 124 and 145 above);
- (m) Improve the accuracy of the estimates of the biomass growth and removals for Guyana, Martinique and La Réunion (see para. 119 above) and the consistency of the areas reported for land converted to cropland and settlements (see paras. 121 and 125 above);
- (n) Improve the accuracy of the estimates of CH₄ recovery from solid waste disposal on land (see para. 132 above) and the allocation of emissions from field burning of agricultural residues (see para. 135 above) and of fugitive emissions from biogas production (see para. 140 above);
- (o) Report the uncertainties for each KP-LULUCF activity (see para. 146 above);
- (p) Improve the consistency and transparency of the reporting of biomass burning under afforestation and reforestation (see para. 151 above);
- (q) Review its estimates for and improve the transparency of the information on deforestation (see para. 154 above);
- (r) Improve the information on the calculation of the commitment period reserve (see paras. 164 and 165 above).

IV. Questions of implementation

183. No questions of implementation were identified by the ERT during the review.

Annex I

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>>.

Intergovernmental Panel on Climate Change. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/gp/english/>>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Available at <<http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”. FCCC/SBSTA/2006/9. Available at <<http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf>>.

“Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention”. FCCC/CP/2002/8. Available at <<http://unfccc.int/resource/docs/cop8/08.pdf>>.

“Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol”. Decision 19/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Decision 15/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Decision 22/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

Status report for France 2011. Available at <<http://unfccc.int/resource/docs/2011/asr/fra.pdf>>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2011. Available at <<http://unfccc.int/resource/webdocs/sai/2011.pdf>>.

FCCC/ARR/2010/FRA. Report of the individual review of the greenhouse gas inventory of France submitted in 2010. Available at <<http://unfccc.int/resource/docs/2011/arr/fra.pdf>>.

UNFCCC. *Standard Independent Assessment Report*, parts I and II. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

Annual submission of France submitted in 2011:

Common reporting format (CRF) tables. Available at
 <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/frk-2011-crf-09sep.zip>;

Land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (KP-LULUCF) CRF tables. Available at
 <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/frk-2011-kplulucf-09sep.zip>;

National inventory report (NIR). Available at
 <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/fra-2011-nir-11apr.zip>;

NIR corrigendum. Available at
 <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/fra-2011-nir-corrigendum-01aug.zip>;

Standard electronic format tables. Available at
 <http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/fra-2011-sef-20may.zip>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Julien Rude (Ministère de l'Écologie, du Développement Durable, des Transports et du Logement – Direction Générale de l'Énergie et du Climat, Département de Lutte contre l'Effet de Serre), including additional information on the methodologies and assumptions used. The following document¹ was also provided by France:

Association Française de Normalisation. 2003. *Référentiel de bonnes pratiques. Protocol de quantification des émissions de protoxyde d'azote dans la fabrication d'acide adipique*. First edition, February 2003.

¹ Reproduced as received from the Party.

Annex II

Acronyms and abbreviations

AD	activity data
CH ₄	methane
CITEPA	Centre Interprofessionnel Technique d'Etudes de la Pollution Atmosphérique
CKD	cement kiln dust
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CRF	common reporting format
DOM	dead organic matter
EF	emission factor
ERT	expert review team
EU ETS	European Union emissions trading scheme
EU	European Union
F-gas	fluorinated gas
Frac _{GRAZ}	fraction of livestock nitrogen excreted and deposited onto soil during grazing
Frac _{NCRO}	fraction of residue dry biomass that is nitrogen
GCIIE	Groupe de concertation et d'information sur les inventaires d'émission
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ without GHG emissions and removals from LULUCF
HFCs	Hydrofluorocarbons
IEF	implied emission factor
INRA	Institut National de la Recherche Agronomique
IPCC	Intergovernmental Panel on Climate Change
KP-LULUCF	land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
kg	kilogram (1 kg = 1,000 grams)
LULUCF	land use, land-use change and forestry
MEDDTL	Ministère de l'Ecologie, du Développement Durable, des Transports et du Logement
Mt	million tonnes
N	nitrogen
N ₂ O	nitrous oxide
NA	not applicable
NE	not estimated
NO	not occurring
NIR	national inventory report
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
SEF	standard electronic format
SF ₆	sulphur hexafluoride
SIAR	standard independent assessment report
UNFCCC	United Nations Framework Convention on Climate Change
VS	volatile solids