



UNITED
NATIONS



Framework Convention
on Climate Change

Distr.
GENERAL

FCCC/IRR/2007/FRA
28 November 2007

ENGLISH ONLY

Report of the review of the initial report of France

According to decision 13/CMP.1, each Annex I Party with a commitment inscribed in Annex B to the Kyoto Protocol shall submit to the secretariat, prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later, a report (the 'initial report') to facilitate the calculation of the Party's assigned amount pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol, and to demonstrate its capacity to account for emissions and the assigned amount. This report reflects the results of the review of the initial report of France conducted by an expert review team in accordance with Article 8 of the Kyoto Protocol.

CONTENTS

	<i>Paragraphs</i>	<i>Page</i>
I. INTRODUCTION AND SUMMARY	1–9	3
A. Introduction	1–2	3
B. Summary.....	3–9	3
II. TECHNICAL ASSESSMENT OF THE ELEMENTS REVIEWED..	10–135	7
A. National system for the estimation of anthropogenic GHG emissions by sources and sinks.....	10–18	7
B. Greenhouse gas inventory	19–120	9
C. Calculation of the assigned amount.....	121–123	25
D. Calculation of the commitment period reserve	124	25
E. National registry	125–132	25
F. Land use, land-use change and forestry parameters and election of activities.....	133–135	27
III. CONCLUSIONS AND RECOMMENDATIONS	136–145	28
A. Conclusions	136–142	28
B. Recommendations	143–144	29
C. Questions of implementation.....	145	29

Annexes

I. Documents and information used during the review.....	30
II. Acronyms and abbreviations	33

I. Introduction and summary

A. Introduction

1. This report covers the in-country review of the initial report of France, coordinated by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 28 May to 2 June 2007 in Paris, France, and was conducted by the following team of nominated experts from the roster of experts: generalist – Mr. Tinus Pulles (the Netherlands); energy – Ms. Chia Ha (Canada); industrial processes – Mr. Newton Paciornik (Brazil); agriculture – Mr. Sergio Gonzalez (Chile); land use, land-use change and forestry (LULUCF) – Mr. Héctor D. Ginzo (Argentina); waste – Mr. Faouzi Ahmed Senhaji (Morocco). Mr. Newton Paciornik and Mr. Tinus Pulles were the lead reviewers. In addition, the expert review team (ERT) reviewed the national system, the national registry, and the calculations of the Party's assigned amount and commitment period reserve (CPR), and took note of the LULUCF parameters and of the LULUCF activities elected under Article 3, paragraph 4, of the Kyoto Protocol. The review was coordinated by Mr. Sergey Kononov (UNFCCC secretariat).

2. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1), a draft version of this report was communicated to the Government of France, which has provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

1. Timeliness

3. Decision 13/CMP.1 requests Parties to submit their initial report prior to 1 January 2007 or one year after the entry into force of the Kyoto Protocol for that Party, whichever is later. France submitted its initial report on 21 December 2006, which is in compliance with decision 13/CMP.1. In conjunction with the initial report, France used the greenhouse gas (GHG) inventory submitted to the UNFCCC secretariat on 22 December 2006.

2. Completeness

4. Table 1 below provides information on the mandatory elements included in the initial report. The table is based on the information in the Party's submission and information received during the process of the review. France's base year emissions amount to 563,925,328 tonnes carbon dioxide equivalent (CO₂ eq.).

5. The information in the initial report covers all the elements required by decision 13/CMP.1, section I of decision 15/CMP.1, and relevant decisions of the Conference of the Parties serving as the Meeting of the Parties (CMP). During the review process France provided all the information on the national registry system required by decision 13/CMP.1, section I of decision 15/CMP.1, and relevant decisions of the CMP.

Table 1. Summary of the reporting on mandatory elements in the initial report

Item	Provided	Value/year/comment
Complete GHG inventory from the base year (1990) to the most recent year available (2004)	Yes	Base year: 1990
Base year for HFCs, PFCs and SF ₆	Yes	1990
Agreement under Article 4	Yes	100%
LULUCF parameters	Yes	Minimum tree crown cover: 10% Minimum land area: 0.5 ha Minimum tree height: 5 m
Election of and accounting period for Article 3, paragraphs 3 and 4, activities	Yes	Elected activities: forest management only Elected accounting: annual
Calculation of the assigned amount in accordance with Article 3, paragraphs 7 and 8	Yes	2,819,626,640 tonnes CO ₂ eq.
Calculation of the commitment period reserve	Yes	2,537,663,976 tonnes CO ₂ eq.
Description of national system in accordance with the guidelines for national systems under Article 5, paragraph 1	Yes	
Description of national registry in accordance with the requirements contained in the annex to decision 13/CMP.1, the annex to decision 15/CMP.1 and the technical standards for data exchange between registry systems adopted by the CMP	Yes, partially	Information supplied in the report is very limited. Missing relevant information was provided to the ERT during the in-country visit.

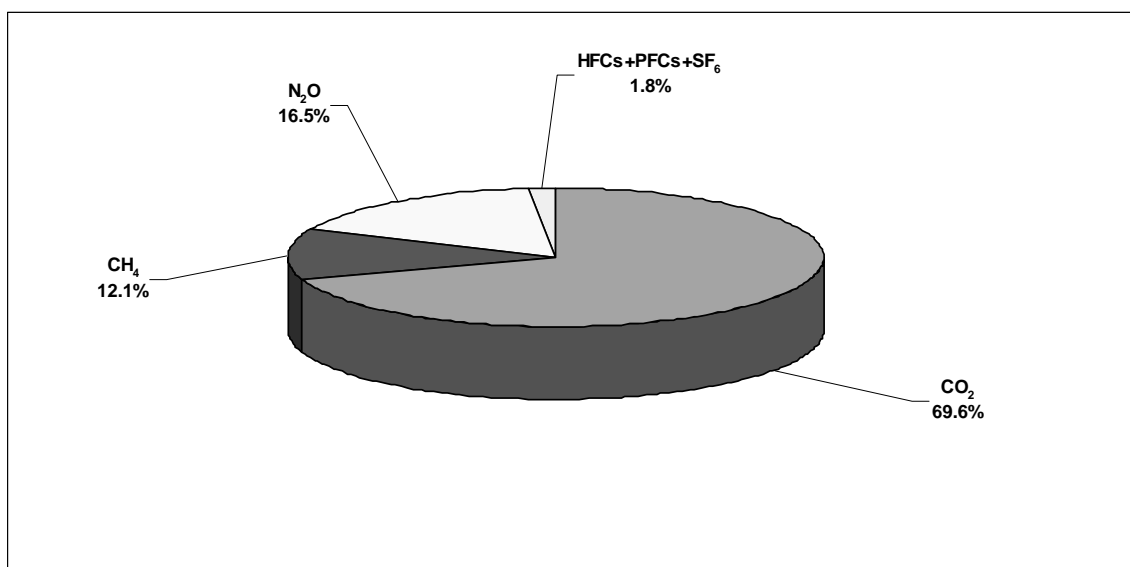
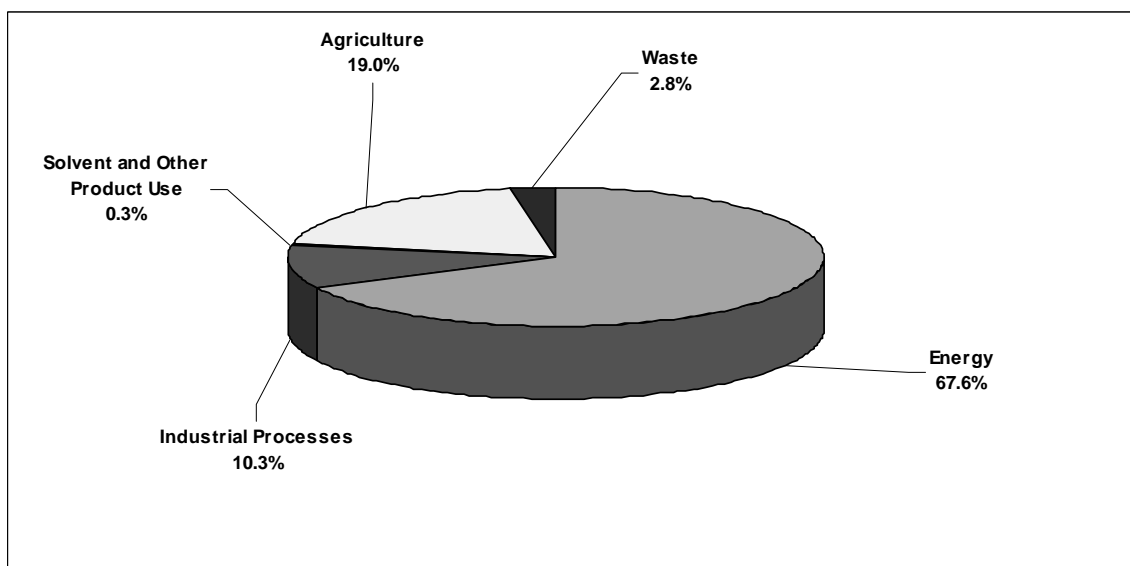
3. Transparency

6. The initial report is generally transparent but rather brief. The description of the national registry in annex iii of the initial report is very brief and the information given is sometimes ambiguous (an example of the latter is the diagram describing the database structure for the national registry). During the review the ERT was given access to additional information which showed that the French registry has all the functionality and security provisions that are required. The ERT recommends France to include a fuller description of the national registry in its next national communication.

4. Emission profile in the base year, trends and emission reduction target

7. In the base year (1990 for all GHGs), the most important GHG in France was CO₂, contributing 69.6 per cent to total¹ national GHG emissions expressed in CO₂ eq., followed by nitrous oxide (N₂O), 16.5 per cent, and methane (CH₄), 12.1 per cent (see figure 1). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) taken together contributed 1.8 per cent of the overall GHG emissions in the base year. The energy sector accounted for 67.6 per cent of the total GHG emissions in the base year, followed by agriculture (19.0 per cent), industrial processes (10.3 per cent) and waste (2.8 per cent) (see figure 2). Total GHG emissions in 1990 amounted to 563,925.3 Gg CO₂ eq. and decreased by 1.1 per cent from the base year to 2004. The trends in individual gases and sectors seem consistent with the development of economic activities in France and the policy measures taken.

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

Figure 1. Shares of gases in total GHG emissions, base year**Figure 2. Shares of sectors in total GHG emissions, base year**

8. Tables 2 and 3 show the GHG emissions by gas and by sector, respectively.

9. France's quantified emission limitation is 92 per cent, as included in Annex B to the Kyoto Protocol. As France is part of the European Community, whose member States will meet their reduction commitment jointly in accordance with Article 4 of the Kyoto Protocol, France's quantified emission limitation is 100 per cent. France's assigned amount is calculated based on the Party's Article 4 commitment. The geographical coverage of France for the Kyoto Protocol differs from that for the Convention. As a consequence of France's reservation when ratifying the Kyoto Protocol, the *collectivités d'outre-mer* are not included in the Kyoto Protocol.

Table 2. Greenhouse gas emissions by gas, 1990–2004

GHG emissions (without LULUCF)	Gg CO ₂ eq.								Change BY (Kyoto Protocol) – 2004 (%)
	Base year ^a (Kyoto Protocol)	1990	1995	2000	2001	2002	2003	2004	
CO ₂	392 627.0	392 627.0	389 908.6	402 087.9	405 755.2	400 984.7	407 866.6	413 128.9	5.2
CH ₄	68 309.6	68 309.6	69 080.4	63 920.7	62 677.7	61 037.3	59 708.8	58 400.7	-14.5
N ₂ O	92 966.8	92 966.8	91 164.6	79 527.2	77 169.1	75 270.3	73 236.9	70 926.7	-23.7
HFCs	3 658.7	3 658.7	3 037.2	7 260.8	8 103.9	9 525.8	10 713.6	11 504.7	214.4
PFCs	4 293.5	4 293.5	2 561.8	2 486.9	2 191.0	3 477.4	3 163.9	2 266.3	-47.2
SF ₆	2 069.8	2 069.8	2 178.3	1 782.9	1 444.7	1 273.0	1 372.7	1 371.7	-33.7

Note: BY = Base year; LULUCF = Land use, land-use change and forestry.

^a The base year under the Kyoto Protocol excludes emissions from the LULUCF sector for all gases.

Table 3. Greenhouse gas emissions by sector, 1990–2004

Sectors	Gg CO ₂ eq.								Change BY (Kyoto Protocol) – 2004 (%)
	Base year ^a (Kyoto Protocol)	1990	1995	2000	2001	2002	2003	2004	
Energy	381 168.4	381 168.4	382 248.0	395 216.2	398 919.4	393 586.5	401 009.2	404 873.3	6.2
Industrial processes	57 826.4	57 826.4	54 452.9	42 009.7	41 781.2	42 011.5	42 716.3	40 901.7	-29.3
Solvent and other product use	1 916.0	1 916.0	1 701.1	1 649.8	1 578.0	1 515.7	1 448.0	1 413.3	-26.2
Agriculture	107 169.5	107 169.5	100 879.7	101 689.3	99 352.9	99 284.8	96 047.3	95 951.3	-10.5
LULUCF	NA	-23 375.1	-27 580.0	-33 889.4	-39 938.8	-47 220.4	-50 399.6	-51 816.8	NA
Waste	15 845.0	15 845.0	18 649.3	16 501.3	15 710.1	15 169.9	14 841.7	14 459.4	-8.7
Total (with LULUCF)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (without LULUCF)	563 925.3	563 925.3	557 930.9	557 066.3	557 341.6	551 568.4	556 062.5	557 599.0	-1.1

Note: BY = Base year; LULUCF = Land use, land-use change and forestry; NA = Not applicable.

^a The base year under the Kyoto Protocol excludes emissions from the LULUCF sector for all gases.

II. Technical assessment of the elements reviewed

A. National system for the estimation of anthropogenic GHG emissions by sources and sinks

10. France's national system has been set up in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1) and can perform the general and specific functions required by the guidelines for national systems. In particular, the ERT noted the following:

- (a) Institutional arrangements have been implemented, including the nomination of a designated single entity;
- (b) Procedures for official approval have been defined;
- (c) Regular updating and monitoring following a quality assurance/quality control (QA/QC) plan have been set up, including a process for making recalculations to improve the inventory;
- (d) Archiving has been arranged;
- (e) The process for collecting data and developing the emission estimates is described, including the identification of key categories.

11. Table 4 shows which of the specific functions of the national system are included and described in the initial report.

Table 4. Summary of reporting on the specific functions of the national system

Reporting element	Provided	Comments
Inventory planning		
Designated single national entity*	Yes	See section II.A.1
Defined/allocated specific responsibilities for inventory development process*	Yes	See section II.A.1
Established process for approving the inventory*	Yes	See section II.A.1
Quality assurance/quality control plan*	Yes	See section II.A.2
Ways to improve inventory quality	Yes	See section II.B.3
Inventory preparation		
Key category analysis*	Yes	See section II.B.1
Estimates prepared in line with IPCC guidelines and IPCC good practice guidance*	Yes	See section II.B.2
Sufficient activity data and emission factor collected to support methodology*	Yes	See section II.B
Quantitative uncertainty analysis*	Yes	See section II.B.2
Recalculations*	Yes	See section II.B.2
General QC (tier 1) procedures implemented*	Yes	See section II.A.2
Source/sink category-specific QC (tier 2) procedures implemented	Yes	See section II.A.2
Basic review by experts not involved in inventory	No	See section II.A.2
Extensive review for key categories	Yes	See section II.A.2
Periodic internal review of inventory preparation	Yes	See section II.A.2
Inventory management		
Archive inventory information*	Yes	See section II.A.3
Archive at single location	Yes	See section II.A.3
Provide ERT with access to archived information*	Yes	See section II.A.3
Respond to requests for clarifying inventory information during review process*	Yes	See section II.A.1

* Mandatory elements of the national system.

1. Institutional, legal and procedural arrangements

12. During the in-country visit France explained the institutional arrangements, as part of the national system for preparation of the inventory. The Direction de la prévention des pollutions et des risques (DPPR) of the Ministère de l'écologie et du développement durable² (MEDD) is the designated single national entity. The MEDD also has the final responsibility for the distribution of the inventory results.

13. Other organizations are also involved in the preparation of the inventory and have defined and allocated specific responsibilities for the inventory development process. These include:

- (a) The Groupe de coordination et d'information sur les inventaires d'émission (GCIIE), established by the MEDD and representing several ministries, which has been set up to discuss and advise on:
 - (i) The results of each annual inventory;
 - (ii) Necessary improvements and the inventory improvement programme;
 - (iii) Any other issue the GCIIE may find relevant;
- (b) Other ministries and governmental institutions which provide data;
- (c) The Centre Interprofessionnel Technique d'Etudes de la Pollution Atmosphérique (CITEPA), which is commissioned by the DPPR/MEDD to perform all the technical activities needed to compile the annual inventory, including the preparation of the common reporting format (CRF) tables and the national inventory report (NIR);
- (d) The Mission interministérielle de l'effet de serre (MIES), which submits the inventory results to the UNFCCC secretariat.

14. 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. The responsible organization is the DPPR. MIES is closely involved in GHG inventory validation.

2. Quality assurance/quality control

15. France has elaborated and implemented a QA/QC plan 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). This includes general QC procedures (tier 1) as well as source/sink category-specific procedures (tier 2) for key categories and for those individual categories in which significant methodological and/or data revisions have occurred. The French QA/QC approach includes the following elements:

- (a) The GCIIE meets three times a year to discuss any issues related to the ongoing and planned inventory-related activities, including proposed improvements to estimation methods. An annual action plan for inventory improvement is worked out and presented to the DPPR for endorsement; MIES also works on the validation of GHG methodologies;
- (b) CITEPA has implemented a quality management system which is certified under International Organization for Standardization (ISO) standard 9001 (version 2000);

² Following the 2007 French presidential elections, the MEDD has been renamed to Ministère de l'écologie, du développement et de l'aménagement.

- (c) CITEPA keeps record of all data, methods and literature used, has arranged for daily backups, and archives the final set of all documentation used for each annual inventory submission on permanent media.

16. As part of the annual inventory cycle, the GCIIE assesses the results of the inventory, the methods used and improvements implemented at a high level of detail. The review also leads to specific proposals for inventory improvement to be included in the quality management plan. With this the QA/QC plan is generally in compliance with the requirements of the IPCC good practice guidance.

17. France has not implemented a process of independent review of the inventory as part of its QA, as required in the IPCC good practice guidance. The ERT recommends France to arrange for such a review before submission and suggests that France should consider whether independent review procedures similar to those set up in other EU member States could also be used in France.

3. Inventory management

18. France has a centralized archiving system, which includes the archiving of disaggregated emission factors (EFs) and activity data (AD), and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. The information archived also includes internal documentation on QA/QC procedures, external and internal reviews, documentation on annual key categories and key category identification, and planned inventory improvements. The archive is kept by CITEPA in electronic form wherever possible. Daily backups of all inventory-related files are complemented by regular copying to permanent media which are kept off-site, not at CITEPA but at a secure location in a bank. All finalized versions of the inventory are archived and can be recovered when needed. Hard copies of reports used are kept in a dedicated library. During the review, the ERT was provided with the additional information it requested from the archives.

B. Greenhouse gas inventory

19. In conjunction with its initial report, France has submitted a complete set of CRF tables for the years 1990–2004 and an NIR. The NIR is accompanied by a technical reference report (the OMINEA report)³ which provides further detailed technical information on the data used and emission factors applied.

20. During the review France provided the ERT with additional information sources. These documents are not part of the initial report submission but are in many cases referenced in the NIR and the OMINEA report. The full list of materials used during the review is provided in annex I to this report.

21. While focusing on the 2006 inventory, during the in-country visit the ERT also had access to the 2007 inventory submission, which was already available. Without reviewing the 2007 submission in detail, the ERT was able to see that it embodied improvements to a number of methods. These improved methods have been used in recalculations of the full time series. This leads to lower estimates of emissions in some categories and to an increase in others. The total impact on the inventory is an increase of 211 Gg CO₂ eq. (or 0.038 per cent) in estimated total emissions for 1990. However, for some specific categories the change in the estimated emissions is significant within the source category. This is the case for solvent use (a decrease of 69 Gg CO₂ eq., or 3.6 per cent), metal production (an increase of 153 Gg CO₂ eq., or 3.4 per cent) and wastewater handling (an increase of 133 Gg CO₂ eq., or 6.7 per cent). The ERT noted that (a) the effect of the recalculations on the total emissions in 1990 is very small, and (b) the 2007 submission has not yet been reviewed, so that its transparency, consistency, completeness, comparability and accuracy have not been established.

³ OMINEA = Organisation et méthodes des inventaires nationaux des émissions atmosphériques.

22. With the knowledge of these changes, the ERT decided to accept the estimates of national total emissions presented in the 2006 submission as the basis for calculating the assigned amount for France. France is, however, strongly recommended to ensure time-series consistency in its future inventories submitted under the Convention and the Kyoto Protocol.

1. Key categories

23. France has reported a key category tier 1 analysis, both level and trend assessment, as part of its initial report submission. France has not included the LULUCF sector in its key category analysis. The key category analysis was performed at a greater level of detail than that proposed in the IPCC good practice guidance. The ERT recommends that France include LULUCF in its key category analysis for the next submission. Since France is reporting uncertainty values, the ERT also recommends France to apply a tier 2 key category analysis, following the decision tree for key category analysis provided in the IPCC good practice guidance.

24. The key category analyses performed by the Party and the secretariat⁴ produced different results, the key reasons being the fact that France has not included the LULUCF sector in its key category analysis, and the differences in the level of aggregation of categories between the secretariat's analysis and that of France.

2. Cross-cutting topics

25. 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 Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF).

26. The inventory has been compiled in accordance with Article 7, paragraph 1, and decision 15/CMP.1.

27. The ERT observed that in the French inventory system the distribution of resources is not always well balanced. In particular:

- (a) The completion of the OMINEA report, which provides the technical background information, lags behind the development of the technical quality of the inventory. This led to frequent requests from the ERT for additional information over and above what was available in the 2006 submission;
- (b) The treatment of uncertainties in the French inventory is still not fully mature, whereas the data collection, data storage and data interpretation systems seem to be well developed.

28. From its experience in other reviews, the ERT tends to the conclusion that the French inventory team, more frequently than the teams in comparable countries (for instance, most of the 15 pre-2004 EU member States), works at the limits of the available resources. The ERT recommends France to review the level of resources provided for the national inventory and to consider how adequate they are.

⁴ The secretariat identified, for each Party, those source 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 Land Use, Land-use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) for the base year or base year period as well as the latest inventory year. Key categories according to the tier 1 trend assessment were also identified. 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.

A comparison with the resources allocated for similar purposes by other EU member States could provide an indication of this.

Completeness

29. France has provided inventory data for the years 1990–2004 and included all the required tables, except for table Summary 3 and tables 5(I), 5(II), 7, 8(b), 9(a) and 9(b). The notation keys are used throughout the tables.

30. The French inventory is almost complete and contains emission estimates and AD for all relevant gases and years. Emissions for a number of minor categories are not estimated because they are expected to be very small. The ERT invites France to estimate emissions from these categories in its future submissions.

Transparency

31. France has developed a detailed and highly sophisticated approach to the compilation of its inventories, which serves not only the reporting requirements under the Climate Change Convention and its Kyoto Protocol, but also the requirements of several other international obligations. This approach ensures consistency between the French submissions to all international conventions and protocols. This is one of the reasons why France has separated detailed technical information from the NIR and provided this in a separate report (the OMINEA report). Since the OMINEA report is a living document, some of the information in it lags behind the preparation of the inventory. An example of this is the country-specific EFs used in the energy sector.

32. The ERT appreciated very much the explanations that France provided to it during the review process to help the ERT better understand the methods used. This face-to-face exchange of information was necessary in order to assess the quality of the French inventory because the NIR in combination with the OMINEA report merely lists the EFs used, rather than providing information on why such EFs were chosen and how their values have been derived. The ERT recommends that France increase the transparency of its inventory by including more explanatory notes in the NIR and the OMINEA report.

Consistency

33. The French inventory is internally consistent and generally the same methods have been applied throughout the period 1990–2004. In the sectoral subsections of this report some minor issues on time-series consistency are mentioned (e.g. for agriculture and waste).

Comparability

34. The French inventory is comparable with those of other Parties as it reports all emissions in the source and sink categories defined in the Revised 1996 IPCC Guidelines and the IPCC good practice guidance.

Accuracy

35. The emissions reported in the French 2006 submission neither underestimate nor overestimate actual emissions for the base year, as far as can be judged. The inventory is therefore accurate as defined 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).

Recalculations

36. The national system can ensure that recalculations of previously submitted estimates of GHG emissions by sources and removals by sinks are prepared in accordance with the IPCC good practice

guidance. Recalculations are part of the French annual inventory cycle and are planned, implemented and monitored by the GCIE.

37. The ERT noted that recalculations reported by the Party of the time series from the base year to 2004 had been undertaken to take into account updated AD, and in some cases improved estimation methods. National total GHG emissions excluding LULUCF changed only slightly due to these recalculations – they decreased by 0.75 per cent. For the base year, compared to the 2005 submission, the emissions in the energy sector decreased by 4,272 Gg CO₂ eq. Emissions/removals from the LULUCF sector were reported for the first time in the 2006 submission.

Uncertainties

38. The Party has provided a tier 1 uncertainty analysis for each category and for the inventory in total, following the IPCC good practice guidance. The uncertainty parameters used by France are in most cases based on expert judgement; these experts are frequently staff of CITEPA. The ERT recommends that France seek additional information on uncertainty estimates that might be available within other institutions in France.

39. The uncertainty estimates presented in the NIR are the result of analyses which are detailed further in the OMINEA report. This information is not used in the key category analysis. The NIR does not mention that the uncertainty analyses are used to prioritize inventory improvements. The ERT recommends the Party to further develop its uncertainty analysis and to use the results both in a tier 2 key category analysis and to prioritize inventory improvements.

3. Areas for further improvement identified by the Party

40. The NIR identifies several generic areas for improvement. These include to:

- (a) Undertake research to improve the precision of the key categories;
- (b) Further develop and apply uncertainty information by estimating uncertainty ranges and using the information explicitly in inventory improvement;
- (c) Include any category not yet covered or insufficiently treated (e.g. non-energy use of fossil fuels);
- (d) Further improve procedures in the quality management system, especially the consultation with external experts in certain areas.

4. Areas for further improvement identified by the ERT

41. The ERT identified the following cross-cutting issues for improvement over and above the issues identified by the Party. The Party should:

- (a) Improve transparency in the inventory through improving the explanatory power of both the NIR and the OMINEA reports by:
 - (i) Reconsidering the balance between the NIR and the OMINEA report, and including or repeating some of the general explanations in the OMINEA report in the NIR;
 - (ii) Decreasing the need for consultation of experts by giving the rationale for the selection of country-specific EFs and other parameters in the NIR/OMINEA report;

- (b) Improve QA in the system by implementing a review prior to each inventory submission; the ERT suggests that France consult with other EU member States that have already implemented such a procedure.

42. Recommended improvements relating to specific source/sink categories are presented in the relevant sector sections of this report.

5. Energy

Sector overview

43. Total GHG emissions from the energy sector in France increased by 6.2 per cent from 381,168.4 Gg CO₂ eq. in 1990 to 404,873.3 Gg CO₂ eq. in 2004. In the base year (1990), the energy sector contributed 67.6 per cent to total national GHG emissions; 97.0 per cent of energy sector emissions, or 369,768.3 Gg CO₂ eq., resulted from the combustion of fossil fuels. Within the sector, 31.6 per cent of emissions are from transport-related activities, followed by 26.0 per cent from the other sectors, 21.8 per cent from manufacturing industries and construction, 17.6 per cent from energy industries and 3.0 per cent from fugitive sources. GHG emissions from transport and the other sectors increased by 20.7 per cent and 12.1 per cent, respectively, between 1990 and 2004. During this period, GHG emissions associated with manufacturing industries and construction and with energy industries decreased by 6.6 per cent and 4.9 per cent, respectively. Fugitive GHG emissions decreased by 39.1 per cent and, within the fugitive sources, the emissions associated with solid fuel activities decreased by 85.6 per cent or 3,716.7 Gg CO₂ eq. due to mine closures.

44. In 2004, the energy sector contributed 72.6 per cent of total national GHG emissions. Within the energy sector, 36.0 per cent of emissions were from transport, followed by the other sectors with 27.4 per cent which included emissions from commercial and residential sources. Manufacturing industries and construction contributed 19.2 per cent, while energy industries as a whole contributed 15.7 per cent to emissions from the sector. The remaining 1.7 per cent is associated with fugitive sources.

45. In general, the GHG emission inventory for the energy sector is complete and includes relevant overseas territories.⁵ Overall, the energy sector's approach is consistent with the Revised 1996 IPCC Guidelines and the IPCC good practice guidance. In almost all cases sectoral emission estimates or AD derived by a model and/or reported by facilities are continuously validated by the technical experts at CITEPA using national statistics such as the energy balance (Ministère de l'économie, des finances et de l'industrie, (MEFI), 2005) and the petroleum statistics report by the Comité professionnel du pétrole (CPDP), 2005. The ERT acknowledges the efforts made by the CITEPA team to ensure the accuracy and quality of their estimates for the energy sector by comparing the AD generated or reported, EFs and estimates with other relevant national and international statistics.

46. With respect to the CRF tables, there are some transparency and completeness issues such as: blank cells; a lack of explanations for the use of the notation keys "not estimated" ("NE") and "included elsewhere" ("IE"); and incorrect usage of notation keys. For example, no explanations are provided in the 1990 CRF for the use of "NE" and "IE" for flaring (1.B.2(c)), or in the table sectoral background data for energy – fugitive emissions from oil and natural gas (1.B.2). In addition, for natural gas transmission and distribution (1.B.2(b)), the notation keys "not applicable" ("NA") and "not occurring" ("NO") should be corrected to "IE" since the Party has indicated that emissions from natural gas transmission and

⁵ Due to France's reservation when ratifying the Kyoto Protocol, only a part of the overseas territories (the *départements d'outre-mer*, DOMs), is included in the French inventory for the purposes of the Kyoto Protocol. Another part, the *collectivités d'outre-mer* (COMs), is included only in the French GHG inventory under the Convention.

distribution are accounted for in the exploration line. For the future, the Party has indicated that efforts toward refinement will continue with respect to notation keys and that it will review the possibility of reporting separately fugitive emissions associated with natural gas transmission and distribution. To ensure completeness and to increase the transparency of the information reported in the CRF, the ERT recommends that the Party provide relevant explanations included in the CRF documentation and explanation boxes. The ERT also encourages the Party to review the allocation of fugitive emissions from oil (1.B.a), in particular for oil transport, distribution of oil products and other sources for both crude oil and refined petroleum products.

47. With respect to the methodological write-up for the energy sector in the NIR and the OMINEA report, discussions of emission trends (for electricity and heat generation, petroleum refining, transport and residential sources) and EF tables are included; however, additional details such as those provided during the review will further enhance the transparency of both documents. Additional details such as explanations, including reference materials, for the use of AD, country-specific EFs, and the methods and factors influencing energy trends were very useful for understanding the methodology and the emission trends. The ERT encourages the Party to further elaborate in the NIR and the OMINEA report on the relevant criteria used for the development of estimation methods (including EFs and AD) and to supply relevant information via tables and figures for trend analyses such as fuel consumption patterns and production data.

Reference and sectoral approaches

48. The reference approach as reported in the CRF tables for the period 1990–2003 is consistent with the IPCC reference approach, which is based on the energy data set provided by l'Observatoire de l'énergie to the International Energy Agency (IEA) along with IPCC default conversion factors, carbon conversion factors and oxidation rates. The reference approach information for the year 2004 is not reported in the CRF table because the energy data set that is provided to the IEA is not available annually in time to be used to report to the UNFCCC. Instead, the Party has developed a simplified reference approach for the complete time series, including 2004, and this is presented in the NIR. The simplified reference approach is based on the national energy balance and country-specific conversion factors. Information on overseas territories is also included in the simplified reference approach to ensure that results are comparable with those obtained from the sectoral approach. The ERT recommends that the Party report information in the reference approach tables of the CRF for all years in order to meet the completeness criteria set out in the UNFCCC reporting guidelines. The Party has indicated that the inventory and national energy balance teams will work jointly on developing an approach to ensure that a consistent set of energy data is made available on a timely basis.

International bunker fuels

49. Emissions from international bunkers are reported in the memo section of the CRF table for all gases. In 1990, emissions from aviation and marine bunkers were 8492.43 and 8011.69 Gg CO₂ eq., respectively. An IPCC tier 2b approach, a method similar to that used for civil aviation, is used to estimate emissions for the aviation bunker by excluding the domestic fuel consumed for landing and take-off (LTO) and cruise parts of flight from the national total of fuel sold. The ERT encourages the Party to implement its improvement plans to obtain timely overseas territory statistics and to ensure that the CO₂ estimates and the volume of fuel for international bunkers match those from the national statistics, and to include overseas data in the national energy balance and in those reported to the IEA. The ERT also recommends the Party to review its practice of reporting aviation bunker fuels and emissions, separately by fuel type, in table 1.C (sectoral background data for energy – international bunkers and multilateral operations). Currently, the “IE” notation key is reported for gasoline aviation bunker without further explanation.

50. The methodology applied for the marine bunker is a CORINAIR approach with default IPCC EFs. Marine bunker fuels are calculated based on 100 per cent of the foreign flag fleet and 96 per cent of the French flag fleet, with the remaining 4 per cent being included in domestic navigation. The Party acknowledged the uncertainty associated with coastal traffic data due to a lack of better statistics. The ERT encourages the Party to improve the collection of marine bunker fuel statistics and to improve the maritime and inland traffic statistics in order to properly allocate domestic and foreign marine emissions.

Feedstocks and non-energy use of fuels

51. Feedstocks and non-energy use of fuels are reported in the CRF tables from 1990 to 2003. To ensure completeness, the ERT recommends the Party to report in the CRF tables a full time series of feedstock information. As was indicated during the in-country visit, feedstocks and non-energy use of fossil fuels have been allocated to the industrial sector based on the quantity and percentage of fossil fuel used as a material input to a process by each industry, as published in the petroleum statistics report by the CPDP, 2005.

Country-specific issues

52. To ensure completeness, the Party includes in the NIR and CRF tables the GHG emissions associated with overseas territories, but the national energy balance compiled by the Observatoire de l'énergie from data supplied by the MEFI does not include fossil fuel and energy information from the overseas territories. The official decision to include information from the overseas territories in the national energy balance project is expected during 2007. If approved, the project is expected to be completed by 2010 and will incorporate fuel information from 1990 to the current year. The ERT encourages the Party to implement the inclusion of fossil fuel and energy data from overseas territories in order to ensure accurate and complete coverage of emissions and fuels, which is an essential criterion of the UNFCCC reporting guidelines.

Key categories

Road transportation – CO₂

53. CO₂ from road transportation increased by 19.1 per cent between 1990 and 2004. In 1990, CO₂ emissions were 110,738.1 Gg, contributing to over 30.4 per cent of the energy sector's CO₂ emissions. The COPERT III model is used to estimate emissions from road transportation. The inputs to the COPERT III model include such parameters as length of trip, average speed, fleet technology (including the penetration rate of a new fleet with emission control technologies), and the shares of urban, rural and highway journey conditions. A validation of the model is performed by comparing the reported information on the fuel sold (such as gasoline and diesel oil) with the results calculated by the COPERT III model. Results from the validation process show that the volume of fuel sold for road transportation compared to that estimated by the COPERT III model differs within a range of 0.1 to 5.0 per cent. For 1990, the validation process shows a difference of 1.7 per cent indicating that the volume of fuel consumed and the emissions are overestimated by the COPERT III model. A correction step to account for the volume of fuel sold and emissions has been included in the road transport model. To increase the transparency of the road transport methodology, the ERT recommends the Party to further elaborate the validation and correction processes in the NIR. The Party has indicated that it has updated the road transportation method with the COPERT IV model as part of its improvement plan which also includes a validation process of the new estimates. The ERT also encourages the Party to ensure that estimated fuel consumption in the new model matches exactly the volume of fuel sold in national statistics.

Stationary combustion: all fuels – CO₂

54. CO₂ emission estimates from stationary combustion categories are based on a mix of tier 1, tier 2 and tier 3 approaches depending on data availability for each category. During the in-country visit, the Party presented in detail the methodology and verification process for some categories, such as the use of a tier 2 method for public power production and a tier 1 method for small district heating plants. To ensure that the emission estimates are comparable in terms of quality and accuracy it is important that a tier 2 approach is applied when estimating CO₂ emissions from electricity and heat generation.

55. For some industrial sectors, such as the petroleum industry, stationary combustion estimates are based on facility-specific emissions, EFs and/or AD. The increasing use of facility-reported information from the EU Monitoring Directive and the EU emissions trading scheme (EU ETS) means that a comprehensive description of how facility-specific information is integrated into the combustion and fugitive estimation methods of the inventory, including an assessment of the quality of facility-reported data and the applicability of facility-specific EFs or AD used at the national level for cases where coverage is not 100 per cent, should be included in the NIR. As part of the Party's planned improvements, the ERT encourages France to ensure that its CO₂ estimates are consistent with the data on CO₂ emissions reported by facilities under the EU ETS.

Civil aviation: liquid – CO₂

56. CO₂ emissions from jet kerosene for civil aviation have been identified as a key category based on a level assessment. In 1990, CO₂ from civil aviation accounted for 1.2 per cent of CO₂ from the energy sector or 4,483.1 Gg CO₂ eq. An IPCC tier 2b approach is used to estimate CO₂ emissions along with data on annual commercial air traffic movements and EFs, depending on the type of aircraft engine in operation and landing and take-off conditions. In 1994, the number of direct flights between France and its overseas territories increased and as a result the volume of fuel consumed for domestic flights also increased, contributing to CO₂ emissions from liquid fuels. Emissions for both jet kerosene and aviation gasoline have been reported for information purposes as jet kerosene in table sectoral background data for energy – civil aviation (1.A.3(a)) in the CRF. A validation check has been performed by the Party with respect to the volume of fuel calculated by the model and the volume sold. The ERT supports the Party's future improvement plans to increase the reporting transparency of the CRF by disaggregating emissions associated with aviation gasoline and jet kerosene as well as the Party's plan to account for new aircraft and changes in operational conditions.

Coal mining and handling – CH₄

57. Coal mining and handling activities resulted in the emission of 203.8 Gg CH₄ in 1990 (27.7 Gg CH₄ in 2004). Emissions decreased by 86.4 per cent between 1990 and 2004, mainly due to mine closures. Although minimal compared to other sources in the energy sector, coal mines will continue to emit CH₄ from the exposed mine surface and from mine degasification. The methodology applied is based on the CORINAIR with mine-specific information on the AD and CH₄ EFs. This is considered to be consistent with an IPCC tier 2/3 approach. Where mine-specific data are not available, an IPCC tier 1 approach has been applied for surface mines since 2002 and for underground mines since 2005. The ERT recommends that the Party review the methods used to estimate fugitive emissions associated with coal mining and handling in order to ensure that a consistent method is applied for the entire time series.

Non-key categories

Manufacturing industries and construction – CH₄ for cement and CH₄ and N₂O for glass production

58. National production data on clinker and on glass are used instead of fuel consumption data to estimate non-CO₂ emissions from combustion activities in cement and glass production. The ERT encourages the Party to develop fuel-based non-CO₂ EFs for use in estimating fuel combustion emissions instead of the use of product-based EFs from a Swiss study, which may not reflect furnace technologies and operating conditions in France.

6. Industrial processes and solvent and other product use

Sector overview

59. In 1990, GHG emissions from the industrial processes sector accounted for 10.3 per cent of total national GHG emissions (7.3 per cent in 2004). In both 1990 and 2004, the solvent and other product use sector accounted for 0.3 per cent of total national emissions. In 1990, CO₂ accounted for 40.9 per cent of emissions from the industrial processes sector, N₂O for 41.8 per cent, and actual emissions of fluorinated gases (F-gases) for 17.3 per cent (in 2004, the shares were 47.6, 15.2 and 37.2 per cent, respectively). In 1990, in the solvent and other product use sector, CO₂ accounted for 96.0 per cent of emissions (94.3 per cent in 2004), the rest being N₂O emissions. In the period 1990–2004, GHG emissions from the industrial processes sector decreased by 29.1 per cent, mainly because of decreases in CO₂ emissions from cement and ammonia production, N₂O emissions from adipic and nitric acid production, HFC emissions from the production of halocarbons, and PFC emissions from the production of aluminium.

60. France's overall inventory is complete for the industrial processes sector. Emission estimates for a few, usually small, categories are still missing even though they were highlighted in previous reviews, such as asphalt roofing and some emissions from petrochemicals. The completeness of the coverage of limestone calcination in the emission estimates should be further investigated by France. France does not report potential emissions of HFCs even though this is recommended by the UNFCCC reporting guidelines for QC and verification. Notation keys are sometimes used incorrectly and explanations associated with the "IE" notation key are not provided. For instance, France reports emissions from ferroalloys production as "NE". During the in-country visit France indicated that emissions from ferroalloys production were included in the iron and steel production category, although this is not mentioned in the NIR and not presented, for example, with the use of the "IE" notation key in the CRF tables. The ERT recommends that the approach to reporting emissions from ferroalloys production be further investigated and clearly described in the NIR.

61. Many items of methodological or criteria information cannot be found in either the NIR or the OMINEA report. This is particularly relevant for the categories related to the production and consumption of halocarbons. However, this information was provided to the ERT during the in-country visit.

62. The time series is consistent overall. A few inconsistencies have been identified for categories where data for recent years now rely on mandatory emissions reports by industries while past estimates were based on EFs. The ERT recommends that France investigate the possibilities for ensuring time-series consistency in the relevant categories. Some recalculations have been undertaken since the last (2005) submission. The most relevant is related to PFC emissions from aluminium production, where the emissions for the year 1990 increased by 32.4 per cent as a result of a recalculation.

63. Uncertainty estimates for AD and EFs are provided for most categories. These estimates are in line with the default values in the IPCC good practice guidance. The ERT recommends that France undertake research to improve these estimates to better reflect national circumstances.

64. Information on the QC procedures that are undertaken for each category was provided for the ERT during the in-country visit. The methodological files are well prepared and well documented. However, they are in a spreadsheet format and often large in size, making QC difficult. The ERT recommends that France investigate opportunities to use a database for storing and supporting the methodological files.

Key categoriesCement production – CO₂

65. In the period 1990–2004, CO₂ emissions from cement production decreased by 17.7 per cent due to a decrease in production. The EF was kept constant during the period (0.525 t CO₂/t clinker). This emissions factor (EF) is higher than the IPCC default (0.51 t CO₂/t clinker). France explained in the OMINEA report that clinker in France contains about 2 per cent of magnesium oxide (MgO), which increases the EF. The ERT recommends that France expand this explanation by providing reasons why France's clinker differs from the clinker as assumed in the Revised 1996 IPCC Guidelines.

Lime production – CO₂

66. Reported emissions in this category do not include emissions by auto-producers (producers of lime for use on-site). During the in-country visit France explained that all lime produced in paper mills and the sugar industry is produced from CO₂ generated by biomass combustion, and that the iron and steel industry does not produce lime on-site. The ERT recommends that France continue to investigate the external input of limestone for calcination in these and other industries.

Ammonia production – CO₂

67. In the period 1990–2004, emissions from ammonia production decreased by 41.8 per cent, in part due to a decrease in the implied emission factor (IEF) from 1.7 t/t in 1990 to 1.4 t/t in 2004. During the in-country visit France explained that this decrease was because of an increase in the efficiency of the process. France estimates emissions of CO₂ from this category by extrapolating, for all the national production, the reported emissions from 75 per cent of the ammonia production in the country. The contribution of one facility is 25 per cent of total French production. However, the variation of the value over time appears to be high for this site. In response to questions from the ERT, France justified the rationale for the extrapolation method used and informed the ERT of plans to improve data collection. In addition, France identified a data error for 1995 as the reason for the time-series variation. The error will be corrected in the next submission.

Adipic acid production – N₂O

68. In the period 1990–2004, N₂O emissions from adipic acid production decreased by 92.1 per cent. The reduction was because of the installation of abatement equipment since 1998 in the sole production plant in France. AD and IEFs are treated as confidential by France. During the in-country visit, the ERT had access to the confidential data and acknowledged that the emissions estimates are in accordance with the IPCC good practice guidance.

Nitric acid production – N₂O

69. In the period 1990–2004, N₂O emissions from nitric acid production decreased by 29.2 per cent. This decrease was in part because of a reduction in the production of nitric acid (–14.0 per cent) and in part because of the reduction of the IEF (–17.7 per cent). During the in-country visit, France explained that the reduction in the EF resulted from the optimization of the process and from the installation of abatement equipment in some plants since 2001. The ERT recommends that France include a more detailed explanation of the decrease in the NIR.

Chemical industry: other – N₂O

70. In the period 1990–2004, N₂O emissions from this category decreased by 85.7 per cent. These emissions are mainly from the production of glyoxylic acid. The installation of abatement equipment in this industry since 1999 explains the decrease in emissions.

Iron and steel production – C₂O

71. The ERT welcomed the extensive carbon balance assessment applied by France, together with the assessment of energy consumption in the production of iron and steel. This approach permits the correct division of CO₂ emissions between the energy sector and the industrial processes sector as recommended by the IPCC good practice guidance.

Aluminium production – PFCs

72. In the period 1990–2004, emissions of PFCs in this category decreased by 59.1 per cent. This decrease was because of the closure of old plants and the construction of a new plant in 1991, together with improvements to anode effect control in the industry. A complete time-series recalculation of the emissions has been carried out since the last (2005) submission, due to a methodological change in line with International Aluminium Institute (IAI) recommendations. As a result, emissions in the base year increased by 32.4 per cent.

By-products emissions – HFCs

73. In the period 1990–2004, HFC-23 emissions from the production of HCFC-22 decreased by 80.7 per cent, following the installation of abatement equipment since 1994/1995. France also reports HFC-125 and CF₄ emissions from trifluoroacetic acid (TFA) production.

Fugitive emissions – F-gases

74. France produces HFCs in two plants. One of them also produces PFCs. In the period 1990–2004, fugitive emissions of HFCs decreased by 93.3 per cent due to the optimization of processes and to incineration equipment installed since 1993. France reported a 100 per cent reduction of PFC emissions since 2003. The ERT recommends that France further investigate whether fugitive emissions of PFCs occur in the industry.

Consumption of halocarbons and SF₆

75. The ERT recognizes the extensive coverage of the sector in the inventory of France, including the implementation of an in-depth study of the refrigeration sector. Total emissions from halocarbons and SF₆ in CO₂ eq. increased by 764.5 per cent in the period 1990–2004.

7. AgricultureSector overview

76. In the base year (1990), GHG emissions from the agriculture sector in France amounted to 107,169.5 Gg CO₂ eq., or 19.0 per cent of total national GHG emissions; these emissions decreased by 10.5 per cent from the base year to 2004. In 1990, CH₄ contributed 41.5 per cent and N₂O 58.5 per cent to sectoral emissions; this ratio is stable along the time series as the shares were 42.4 and 57.6 per cent, respectively, in 2004. No recalculations have been made since the 2005 submission.

77. The NIR and the OMINEA report describe the relevant methodological issues but these descriptions are rather brief, which makes it difficult to understand the rationale and the particularities for the most complex categories, such as manure management and agricultural soils.

78. The sectoral submission of GHG data can be defined as complete and consistent, but France did not complete table summary 3s2. QA/QC procedures are in place but only general explanations are given in section 1.6 of the NIR. Uncertainties estimates for individual sectoral categories are provided in table 40 of annex 2 to the NIR; more detailed information was provided for the ERT during the review.

79. The ERT recommends France to improve:

- (a) The transparency in methodological issues, on the development of country-specific EFs and on AD specificities;
- (b) The accuracy of the emissions estimates for manure management, mainly by enhancing the characterization of the most significant species (cattle, swine) and fully applying a tier 2 methodology.

80. The ERT encourages France to improve the accuracy of the emission estimates for agricultural soils, in particular by investigating the opportunities for using country-specific EFs for each fertilizer type, crop and/or agricultural region with similar environmental conditions.

Key categories

Enteric fermentation – CH₄

81. The ERT noted some differences in the animal populations given in the NIR and in the United Nations Food and Agriculture Organization (FAO) database for all years; these differences are minor for cattle and sheep but considerable for swine. According to the explanations provided by France during the in-country visit, these differences are due to (a) the animal populations in the *departments d'outre-mer* (DOMs) and (b) the differences for swine population. The Party indicated that these differences will be explained in the next inventory submission.

82. The swine population decreased by 12 per cent from 1998 to 1999. During the review, France explained that the decrease was due to a change in the definition of “piglet” (a subcategory which is systematically deducted from the total swine population) by AGRESTE, the French agriculture statistics institute. Formerly, the definition of piglet only covered individual pigs with a weight up to 20 kg, whereas from 1999 it also contained individuals with a weight between 20 kg and 50 kg. For consistency, the ERT recommends that population numbers from 1999 onwards be corrected and that GHG emissions linked to swine (for enteric fermentation, manure management, agricultural soils) be recalculated for the next submission. In its response to the ERT’s questions, France has shown that this will solve the time-series inconsistency. France will apply the corrected values in its future submissions.

83. In the NIR, France reported the use of a tier 1 method and default EFs, except for dairy cows for which a model derived at the Institute National de la Recherche Agronomique (INRA) was applied which can be considered as tier 3 method. During the in-country visit, France explained that this national approach was also applied for non-dairy cattle, which is in line with the IPCC good practice guidance. The ERT encourages France to estimate emissions from other important species applying higher tiers.

Manure management – CH₄

84. France reported the use of a tier 1 method and default EFs, which, for a key category, is not in line with the IPCC good practice guidance. During the in-country visit, France explained that the use of equation 4.17 of the IPCC good practice guidance and country-specific manure management distribution allowed the generation of country-specific EFs for cattle and swine. The ERT encourages France to apply higher tiers to estimate emissions from the important species.

85. In table 4.B(a)s1, zeros were specified for the allocation of climate regions for three subgroups of non-dairy cattle, whereas no data were provided in table 4.A for the same group of animals. To ensure consistency across the CRF tables, the notation key “NA” must be used for these parameters.

Manure management – N₂O

86. As is noted in previous reviews, the value for the amount of nitrogen (N) from pasture range and paddock differs between tables 4.B(b) and 4.D. France explained that the difference is due to the

impossibility of allocating N in DOMs to this subcategory in table 4.D, which results in their allocation under 4.D others. The ERT encourages France to explain this difference in its next submission.

87. In table 4.B(a)s2, values for swine allocation in “pasture range and paddock” vary in the sequence 0.0025, 0.17 and 0.84 every three years. Taking into account that allocation values for “liquid system” and “solid storage” are correct, the right allocation value for “pasture range and paddock” should be 0.25. The ERT suggests that France rectify this issue for its next submission.

88. The N excretion rates for non-dairy cattle, sheep and swine differ from IPCC default values (57.9 vs 70, 18.5 vs 20, and 16.4 vs 20 kg N/head/year, respectively), although France reported the use of a tier 1 approach and default values. During the review, France explained that the differences are due to a different allocation of animals between manure management systems. For transparency, the ERT recommends France to include this explanation on its next submission.

Agricultural soils – N₂O

89. In the NIR, France reported the use of a tier 1 approach and default EFs but the EF₁ for sewage sludge (0.01125 kg N₂O–N/kg N) differs from the default value (0.0125 kg N₂O–N/kg N). During the review, France explained that this was because the total N was considered for sewage sludge spreading, whereas for the other sources the amount of N considered was the difference between the applied N and the volatilized N. The ERT considers this to be an inconsistency and recommends that France correct it in its next submission.

Non-key categories

Rice cultivation – CH₄

90. No information is provided in the NIR on management practices. The ERT recommends that France provide such information, mainly on the use of organic amendments that can imply the use of scaling factors.

8. Land use, land-use change and forestry

Sector overview

91. In the base year (1990), the LULUCF sector was a sink: the net GHG removals from LULUCF amounted to 23,375.1 Gg CO₂ eq., or 4.1 per cent of total national GHG emissions, which amounted to 563,925.3 Gg CO₂ eq. in 1990. This net sink value was the sum of net CO₂ removals of –27,101.6 Gg, CH₄ emissions of 847.4 Gg CO₂ eq., and N₂O emissions of 2,879.2 Gg CO₂ eq.

92. Forest land was the largest sink within the LULUCF category, with net removals of 44,859.5 Gg CO₂ eq. in 1990. Net CO₂ removals from forest land remaining forest land accounted for 79.4 per cent of total CO₂ removals from forest land. Emissions of CH₄ and N₂O are reported only for forest land remaining forest land and they are very small in value (less than 1 per cent of the cumulative total in CO₂ eq.) compared to net CO₂ removals.

93. Cropland was a net source of GHG emissions, 25,755.0 Gg CO₂ eq. in 1990, made up of CO₂ (22,788.6 Gg), CH₄ (245.2 Gg CO₂ eq.) and N₂O (2,721.1 Gg CO₂ eq.). The emissions of CH₄ and N₂O together accounted for 11.6 per cent of total emissions from cropland, the emissions of N₂O being the largest (10.6 per cent of total emissions from cropland).

94. Grassland was a net CO₂ sink (–9,546.1 Gg CO₂), mostly from lands converted to grassland (–9,649.7 Gg CO₂). The emissions of CH₄ and N₂O were small (about 1.9 per cent of total net GHG removals from this category) and consisted mostly of CH₄ (1.7 per cent) from grassland remaining grassland.

95. In general, the reporting for the LULUCF sector is complete, except for the absence of a key category analysis including LULUCF. The ERT recommends that France conduct such an analysis for its next submission.

96. However, the reporting is not uniformly transparent. Some CRF tables have not been completed (e.g. CRF tables 7, summary 3s2, 5(I) and 5(II)). There are useful references in the 2007 OMINEA report (e.g. in the section on forest fires), which is not currently under review, that should have been included in the 2006 version of the report. The OMINEA report is not very explicit on the methodologies used to estimate changes in biomass stocks; however, during the in-country visit, after discussions with country experts, it became clear that these methodologies correspond with the IPCC good practice guidance for LULUCF. The ERT encourages France to provide more details on methodologies and parameters in its inventory report as this would easily resolve such transparency problems.

97. The reporting is consistent. The 2005 review raised a case of inconsistency relating to a removal of 31.1 Gg of CH₄ by soils, for which the calculation method was not clear. During the 2006 review, the ERT received a report⁶ containing the EF value and a file⁷ containing the AD used to estimate that removal of CH₄ by soils; these data are consistent with the IPCC good practice guidance, and some of them are referenced in section 3.2.1.4 of the IPCC good practice guidance for LULUCF.

98. Emissions and removal estimates from carbon pools were generally estimated using tier 2 approaches, consistent with the IPCC good practice guidance for LULUCF, and country-specific parameter values.

99. France has not included the LULUCF sector in its key category analysis. According to the key category analysis conducted by the secretariat, the key categories in 2004 were, for CO₂, forest land remaining forest land, land converted to cropland, land converted to grassland, land converted to forest land, land converted to wetlands and settlements. For N₂O, the only key category was land converted to cropland. The key categories for the base year (1990) are the same as those for 2004, except for CO₂ from land converted to wetlands which is a key category for 2004 only.

100. Uncertainty estimates (for AD and parameter values) are provided in the NIR for the whole LULUCF sector only and not for individual categories, even though the IPCC good practice guidance for LULUCF advises that estimates should be made for individual categories. The ERT recommends that France evaluate the uncertainties for individual LULUCF categories in its next inventory submission.

Key categories⁸

Forest land remaining forest land – CO₂

101. This category was a sink for CO₂. In the tier 1 key category analysis this category represented 8.6 per cent in the level assessment and 12.6 per cent in the trend assessment. The total of CO₂ emissions from changes in carbon stocks was 24,590.1 Gg CO₂, 81.5 per cent of which was removals derived from changes in living biomass stocks, the rest being emissions from changes in dead biomass stocks. The changes in soil carbon stocks were set to zero (using the tier 1 method from the IPCC good practice guidance for LULUCF). The ERT recommends that France upgrade the methodology to a tier 2 methodology because this is a key category.

⁶ *Contribution à la lutte contre l'effet de serre. Stocker du carbone dans les sols agricoles de France? Expertise Scientifique Collective.* Expert report by the INRA on the request of the Ministère de l'écologie et du développement durable. October 2002.

⁷ FRA: Methane sink ARR 2005 Forestland_activity(1).xls.

⁸ As France has not included the LULUCF sector in its key category analysis, this section is structured following the secretariat's key category analysis.

Land converted to cropland – CO₂

102. This category was a source of CO₂, with the level assessment value in the tier 1 key category analysis of 3.4 per cent of the cumulative total. These emissions in 1990 amounted to 22,237.1 Gg CO₂, 19.0 per cent of which were due to changes in biomass stocks, 2.3 per cent to changes in dead organic matter, and 78.7 per cent to changes in soil carbon stocks.

Land converted to grassland – CO₂

103. This category was a sink for CO₂, with the level assessment value in the tier 1 key category analysis of 1.5 per cent of the cumulative total. The total emissions from the category are the sum of emissions and removals of CO₂ from forest land, cropland, wetlands, settlements, and other land converted to grassland. The resulting overall value was a sink for CO₂ because as much as 12,431.7 Gg were removed by changes in soil carbon stocks in cropland converted to grassland. The other land-use conversions produced emissions of CO₂, from changes in biomass carbon stocks in forest land converted to grassland (2,004.3 Gg), changes in carbon stocks in dead organic matter in all conversion categories in the amount of 560.8 Gg CO₂, and changes in soil carbon stocks (203.8 Gg CO₂) in cropland converted to grassland.

Land converted to forest land – CO₂

104. This category was a sink for CO₂ and represented 1.5 per cent of the cumulative total in the key category level assessment. The largest sink for CO₂ in the category was the conversion of grassland to forest land (48.6 per cent of the total category sink value), followed by the conversion of other land and cropland (22 per cent each) to forest land. In terms of carbon reservoirs, the most important were biomass carbon stocks (about 50.9 per cent of the total category value), followed by dead organic matter carbon stocks (28.3 per cent) and soil carbon stocks (20.8 per cent) from the conversion of grassland and cropland to forest land.

Settlements – CO₂

105. This category was a source of 3,770.5 Gg CO₂ in 1990, which represented 0.6 per cent of the cumulative total in the key category level assessment. Ninety-one per cent of the emissions were from changes in biomass carbon stocks, and the rest were from changes in dead wood stocks.

Land converted to cropland – N₂O

106. This category was a source of N₂O emissions of 8.8 Gg (2,712.5 Gg CO₂ eq.) in 1990 and represented 0.4 per cent of the cumulative total in the key category level assessment. Emissions arose mostly from the disturbance of mineral soils in land conversion; they were estimated using a tier 1 method and IPCC default parameter values from the IPCC good practice guidance for LULUCF.

9. Waste

Sector overview

107. In the base year (1990), the waste sector contributed 2.8 per cent to total national GHG emissions (15,845.0 Gg CO₂ eq.). CH₄ emissions from the waste sector contributed 17.6 per cent to total national CH₄ emissions (3,252.8 Gg). In 2004, these contributions were, respectively, 2.6 and 19.3 per cent.

108. Most of the sectoral CH₄ emissions stemmed from solid waste disposal on land (87.4 per cent in 2004 and 92.5 per cent in 1990). The categories wastewater handling and waste incineration accounted for 5.9 and 1.4 per cent, respectively, of sectoral CH₄ emissions in 1990, and 10.0 and 1.9 per cent, respectively, in 2004.

109. Sectoral GHG emissions decreased by 8.7 per cent between 1990 and 2004. The ERT noted that this change is mostly the result of reductions in emissions from waste incineration (by 27.7 per cent) and from solid waste disposal sites (by 11.2 per cent) between 1990 and 2004, offsetting an increase of emissions from wastewater handling (by 20.2 per cent).

110. All the sectoral CRF tables have been provided. However, in some cases notation keys have been used incorrectly. Table 7 and table summary 3s2 were not completed. The ERT recommends that France provide more detailed information on the methodologies, AD and EFs used in the waste sector, make use of the documentation boxes in the CRF tables and comment more extensively on the results.

111. The estimates for all relevant sources are reported to be of low or medium quality in the NIR (CRF table 7). A quantitative assessment of uncertainties, calculated using the IPCC tier 1 method for the AD and EFs of all subcategories, is reported in the NIR (annex 2, table 40), but is not commented on or used in the NIR. The ERT recommends that the Party not only report on the uncertainties but also elaborate on them in the NIR and use them in data processing (e.g. in interpolation).

Key categories

Solid waste disposal on land – CH₄

112. In the base year, CH₄ emissions from solid waste disposal on land accounted for 16.3 per cent of total national CH₄ emissions and for 92.5 per cent of sectoral CH₄ emissions. These emissions were identified as a key category in both level and trend assessments. An IPCC tier 2 method combined with country-specific parameters has been used to estimate CH₄ emissions from solid waste disposal on land.

113. The composition of municipal solid waste (MSW) is not provided, which decreases the transparency of the emission estimates. The ERT recommends that France provide data that reflect the characteristics of its MSW and a flow diagram for solid waste in its next NIR.

114. The amount of solid waste disposed of on sites equipped with landfill gas recovery systems represents 86.0 per cent of total solid waste landfilled. Data on solid waste disposal on land are drawn from a survey carried out since 1989 (and regularly every two years since 2000) by the Agence de l'environnement et de la maîtrise de l'énergie (ADEME). France is invited to provide in its next NIR the number and capacities of solid waste disposal sites both with and without landfill gas recovery systems.

Waste incineration – CO₂

115. Emissions of waste incineration with heat recovery (95 percent of the total municipal waste) is reported in the energy sector. CO₂ emissions from waste incineration were identified as a key category by the level and trend assessments and accounted for 0.4 per cent of total national CO₂ emissions in 1990. Waste incineration contributed 16.7 per cent to sectoral emissions in 1990 and 13.2 per cent in 2004.

116. Emission factors are drawn from CORINAIR. The ERT recommends that France justify this choice either in the OMINEA report or in the NIR.

117. It is reported in the NIR that emissions from the incineration of special industrial waste in situ, notably in the chemical industry, have been partially estimated. The ERT encourages France to provide AD for this subcategory of waste.

Non-key categories

Wastewater handling – CH₄

118. CH₄ emissions are estimated only for domestic and commercial wastewater treated in centralized treatment units or in individual septic tanks. Industrial wastewater is not accounted for because of the lack of data. The ERT recommends that France fill this gap in its next submission.

119. For these CH₄ (and N₂O) emissions estimates, France has used the IPCC tier 2 methodology combined with a country-specific one. The ERT recommends that France present and document the country-specific methodology in such a manner that information given in the OMINEA report and that given in the NIR are coherent and complementary.

Other (biodegradation of waste and waste composting) – CH₄

120. Biodegradation of waste and waste composting are briefly reported in the NIR. Neither the NIR nor the OMINEA report contain justifications for the selection of the methods and the EFs for these waste treatments. The ERT recommends that this information be provided in the Party's next submission.

C. Calculation of the assigned amount

121. The assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1.

122. France's base year is 1990 and the Party has chosen 1990 as the base year for HFCs, PFCs and SF₆. France's quantified emission limitation is 92 per cent as included in Annex B to the Kyoto Protocol. As France is part of the European Community, whose member States will meet their reduction commitment jointly in accordance with Article 4 of the Kyoto Protocol, France's quantified emission limitation (under the "burden-sharing" agreement) is 100 per cent. France's assigned amount is calculated based on the Party's Article 4 commitment.

123. Based on its base year emissions, 563,925.328 Gg CO₂ eq., and its quantified emission limitation (100 per cent), the Party calculates its assigned amount to be 2,819,626,640 tonnes CO₂ eq. The ERT has checked this calculation and agrees with this figure.

D. Calculation of the commitment period reserve

124. The calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1. Based on its calculated assigned amount, 2,819,626,640 tonnes CO₂ eq., France calculates its CPR to be 2,537,663,976 tonnes CO₂ eq., or 90 per cent of the assigned amount. The ERT has checked this calculation and agrees with this figure.

E. National registry

125. France has provided information on the national registry system as required by the UNFCCC reporting guidelines under Article 7, paragraphs 1 and 2, of the Kyoto Protocol (decision 15/CMP.1). The information provided is in accordance with the requirements of the UNFCCC reporting guidelines but is not fully transparent, for example, in relation to the description of the database structure and measures taken to safeguard, maintain and recover data. During the initial review, the ERT was provided with additional and updated information on the national registry of France, including the information publicly accessible by means of the user interface to the national registry, which is available at: <<https://www.seringas.caissedesdepots.fr>>. The ERT recommends that France provide more detailed information on its national registry in its next inventory report under the Kyoto Protocol and in its next national communication.

126. Table 5 shows which of the mandatory reporting elements on the national registry system, as stipulated by decisions 13/CMP.1 and 15/CMP.1, are provided or referenced in the initial report.

Table 5. Summary of information on the national registry system

Reporting element	Provided in the initial report	Comments
Registry administrator		
Name and contact information	Yes	During the in-country review France informed the ERT that the registry administrator had changed. The new administrator is Ms. Christel Sanguinède.
Cooperation with other Parties in a consolidated system		
Names of other Parties with which France cooperates, or clarification that no such cooperation exists	Yes	
Database structure and capacity of the national registry		
Description of the database structure	Yes, partially	The information supplied in the report is limited. The figure included seems to be incomplete. During the review process the Party provided information on the database structure and clarified that, concerning the capacity of the national registry in terms of account number, there is no limit.
Description of the capacity of the national registry	No	
Conformity with data exchange standards (DES)		
Description of how the national registry conforms to the technical DES between registry systems	Yes	Covered in the independent assessment report (IAR) ^a
Procedures for minimizing and handling of discrepancies		
Description of the procedures employed in the national registry to minimize discrepancies in the transaction of Kyoto Protocol units	Yes	
Description of the steps taken to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transaction	Yes	
Prevention of unauthorized manipulations and operator error		
An overview of security measures employed in the national registry to prevent unauthorized manipulations and to prevent operator error	Yes	
An overview of how these measures are kept up to date	Yes	
User interface of the national registry		
A list of the information publicly accessible by means of the user interface to the national registry	Yes, partially	The initial report contains only the references to the regulations and decisions that define the information that has to be made public. During the review process the Party clarified that the following information is available on the internet site of the French registry: international agreements relative to the registry, frequently asked questions (faq), a glossary of technical terms used, general conditions of use, account opening and tariffs, regulatory reports and a user guide.
The Internet address of the interface to France's national registry	Yes	
Integrity of data storage and recovery		
A description of measures taken to safeguard, maintain and recover data in order to ensure the integrity of data storage and the recovery of registry services in the event of a disaster	No	Relevant information was provided during the in-country visit.

Reporting element	Provided in the initial report	Comments
Test results		
The results of any test procedures that might be available or developed with the aim of testing the performance, procedures and security measures of the national registry undertaken pursuant to the provisions of decision 19/CP.7 relating to the technical standards for data exchange between registry systems.	No	During the in-country visit France provided information about the test procedures already undertaken and those planned for June, July and August 2007. Test results are also covered in the IAR.

^a Pursuant to decision 16/CP.10, once registry systems become operational, the administrator of the international transaction log (ITL) is requested to facilitate an interactive exercise, including with experts from Parties to the Kyoto Protocol not included in Annex I to the Convention, demonstrating the functioning of the ITL with other registry systems. The results of this exercise will be included in an independent assessment report (IAR). They will be also included in its annual report to the CMP.

127. The responsibility for the design and operation of the registry was officially given to the Caisse des dépôts et consignations. It has already implemented the registry under the EU ETS, which has been operational since May 2005. The Seringas software has been developed by France in full cooperation with other Annex I Parties, including Belgium, the Czech Republic, Germany, Luxembourg, Portugal, Slovakia and Spain.

128. The ERT was also informed about the procedures and security measures to minimize discrepancies, terminate transactions and correct problems, and minimize operator error.

129. The ERT acknowledged the effort made by France to put in place these procedures and security measures, including its guarantee of electricity supply, access control, fire protection, and disaster recovery plan. The ERT gained the overall impression that France attaches adequate importance, and has allocated adequate resources, including human resources, to the development, operation and maintenance of the registry under the Kyoto Protocol.

130. The ERT took note of the results of the technical assessment of the national registry, including the results of standardized testing, as reported in the independent assessment report (IAR) that was forwarded to the ERT by the UNFCCC secretariat as the administrator of the international transaction log (ITL) on 10 November 2007 as well as of the additional information forwarded to the ERT by France on 19 October 2007.

131. The ERT reiterated the main findings of the IAR, including that the registry has fulfilled all of its obligations regarding conformity with the data exchange standards (DES). These obligations include having adequate transaction procedures, adequate security measures to prevent and resolve unauthorized manipulations, and adequate measures for data storage and registry recovery.

132. Based on the results of the technical assessment, as reported in the IAR, the ERT concluded that France's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/CMP.1, noting that registries do not have obligations regarding operational performance or public availability of information prior to the operational phase.

F. Land use, land-use change and forestry parameters and election of activities

133. Table 6 shows the Party's choice of parameters for forest definition as well as its elections for Article 3, paragraphs 3 and 4, activities in accordance with decision 16/CMP.1. All parameter values are within the corresponding range of values for defining a forest established by decision 16/CMP.1.

134. France has in place a system for accounting the emissions/removals relevant to the activities of Articles 3, paragraphs 3 and 4, of the Kyoto Protocol, in the metropolitan area and the following DOMs:

Martinique, Réunion and Guadeloupe. That system is equivalent to an approach 2 system, as defined in chapter 2 of the IPCC good practice guidance for LULUCF.

Table 6. Selection of LULUCF parameters

Parameters for forest definition		
Minimum tree cover	10%	
Minimum land area	0.5 ha	
Minimum tree height	5 m	
Elections for Article 3, paragraphs 3 and 4, activities		
Article 3, paragraph 3, activities	Election	Accounting period
Afforestation and reforestation	Mandatory	Annual
Deforestation	Mandatory	Annual
Article 3, paragraph 4, activities		
Forest land management	Elected	Annual
Cropland management	Not elected	Not applicable
Grazing land management	Not elected	Not applicable
Revegetation	Not elected	Not applicable

135. For the overseas department of Guyana, France will develop a system similar to the one used in the metropolitan area. This system is expected to be operational in 2008 and the development of the system is described in the following documents: (a) *Suivi de l'occupation du sol et des changements d'occupation du sol en Guyane par télédétection satellitaire*. Convention N° E 16 / 06. IFN N°. 2006-CIP-2-151. Ministère de l'agriculture et de la pêche. Direction Générale de la Forêt et des Affaires Rurales; and (b) *Expertise sur les références dendrométriques nécessaires au renseignement de l'inventaire national de gaz à effet de serre pour la forêt guyanaise*. Convention N°. 59.02.G 18/05 du 19/12/2005 entre le Ministère de l'agriculture et de la pêche et l'Office national des forêts, Direction régionale de Guyane; provisional report.

III. Conclusions and recommendations

A. Conclusions

136. The ERT concludes that the information provided by France in its initial report is complete and is submitted in accordance with the provisions of paragraphs 5, 6, 7 and 8 of the annex to decision 13/CMP.1, section I of the annex to decision 15/CMP.1 and other relevant decisions of the CMP; that the assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP.1, and is consistent with the inventory estimates as submitted and reviewed; that the calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1, and the LULUCF definitions are within the agreed range.

137. France's national system has been prepared in accordance with the guidelines for national systems and can perform the required general and specific functions required by those guidelines.

138. The GHG inventory is in line with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF.

139. Total GHG emissions in 1990 amounted to 563,925.3 Gg CO₂ eq. These emissions decreased by 1.1 per cent from the base year to 2004. This trend and the trends in individual gases and sectors seem consistent with the development of economic activities in France and the policy measures taken.

140. The assigned amount pursuant to Article 3, paragraphs 7 and 8, has been calculated in accordance with the annex to decision 13/CMP. The calculation of the required level of the CPR is in accordance with paragraph 6 of the annex to decision 11/CMP.1.

141. France has provided information on the national registry system as required by the UNFCCC reporting guidelines. The information, although not fully transparent, was updated during the in-country visit. Based on the results of the in-country review visit and the technical assessment, as reported in the IAR, the ERT concluded that France's national registry is fully compliant with the registry requirements as defined by decisions 13/CMP.1 and 5/CMP.1.

142. France has provided the choice of parameters for forest definition as well as its elections for Article 3, paragraphs 3 and 4, activities in accordance with decision 16/CMP.1. All parameter values are within the corresponding range of values for defining a forest established by decision 16/CP.1. France has chosen forest management as its only activity under Article 3, paragraph 4, of the Kyoto Protocol, and selected annual accounting for activities under Article 3, paragraphs 3 and 4.

B. Recommendations

143. In the course of the review, the ERT formulated a number of recommendations relating to the completeness and transparency of France's information presented in the initial report. The key recommendations⁹ are that France:

- Include an independent review prior to submission of the inventory as part of the QA system;
- Ensure time-series consistency in future inventories submitted under the Convention and the Kyoto Protocol;
- Provide more explanatory texts in NIR and OMINEA reports to increase transparency;
- Further develop its uncertainty analysis and use the results both in a tier 2 key category analysis and in prioritizing inventory improvements;
- Include LULUCF in its key category analysis and apply a tier 2 key source analysis, including uncertainty information;
- Include a more detailed description of its national registry in its next national communication;
- Review the level of resources provided for the national inventories and consider their adequacy.

144. The recommendations in this report should be followed up in the next reviews under the Kyoto Protocol. In particular, France should improve the transparency of the NIR and the OMINEA reports, and ensure time-series consistency in the light of methodological changes or data availability (e.g. mandatory environmental reports; swine population).

C. Questions of implementation

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

⁹ For a complete list of recommendations, the relevant sections of this report should be consulted.

Annex I**Documents and information used during the review****A. Reference documents**

IPCC. Good practice guidance and uncertainty management in national greenhouse gas inventories, 2000. Available at: <<http://www.ipcc-nggip.iges.or.jp/public/gp/english/>>.

IPCC. Good practice guidance for land use, land-use change and forestry, 2003. Available at: <<http://www.ipcc-nggip.iges.or.jp/public/gp/landuse/gp/landuse.htm>>.

IPCC/OECD/IEA. Revised 1996 IPCC Guidelines for national greenhouse gas inventories, volumes 1–3, 1997. Available at: <<http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>>.

UNFCCC. 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/2004/8. Available at: <<http://unfccc.int/resource/docs/2004/sbsta/08.pdf>>.

UNFCCC. 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>>.

UNFCCC secretariat. Status report for France. 2006. Available at: <<http://unfccc.int/resource/docs/2006/asr/fra.pdf>>.

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UNFCCC secretariat. France: Report of the individual review of the greenhouse gas inventory submitted in the year 2005. FCCC/WEB/ARR/2005/FRA. Available at: <<http://unfccc.int/resource/docs/2006/arr/fra.pdf>>.

UNFCCC secretariat. Independent assessment report of the national registry of France. Reg_IAR_FR_2007_1. Available at: <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Régis Meyer and Ms. Frédérique Millard (Mission interministérielle de l'effet de serre) including additional material on the methodology and assumptions used. The following additional information was provided by France during the review.¹

ADEME. 1993. *Outil de calcul des émissions dans l'air de CH₄, CO₂, SOX, NO_x, issues des centres de stockage de déchets ménagers et assimilés*. Agence de l'environnement et de la maîtrise de l'énergie (ADEME).

ADEME. 1999. *Le traitement des déchets ménagers et assimilés en centres collectifs en 1997: données et références*. Agence de l'environnement et de la maîtrise de l'énergie (ADEME).

¹ This list does not include the presentations made by French experts during the in-county visit.

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- Barrault S et al. 2006. *Inventaire des fluides frigorigènes et de leurs émissions*. École des mines de Paris – Centre Énergétique et Procédés (ARMINES). ARMINES, rapport 60588.
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- CPDP. 2005. CPDP – Pétrole : statistique annuel (édition 2005). Comité professionnel du pétrole (CPDP). Publication annuelle
- Houllier C and Crozet B. 1992. *Analyse critique des méthodes utilisées par différents pays pour établir leurs inventaires nationaux d'émissions de dioxyde de carbone*. Rapport final. Centre Interprofessionnel technique d'études de la pollution atmosphérique (CITEPA).

- MAP. 2005. *Statistique agricole annuelle: résultats 2004*. **173** (octobre 2005). Ministère de l'agriculture et de la pêche (MAP).
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Annex II**Acronyms and abbreviations**

AD	activity data	IEF	implied emission factor
CH ₄	methane	IPCC	Intergovernmental Panel on Climate Change
CITEPA	Centre Interprofessionnel Technique d'Etudes de la Pollution Atmosphérique	kg	kilogram (1 kg = 1 thousand grams)
CMP	Conference of the Parties serving as the Meeting of the Parties	kgoe	kilograms of oil equivalent.
CO ₂	carbon dioxide	LULUCF	land use, land-use change and forestry
CO ₂ eq.	carbon dioxide equivalent	m ³	cubic metre
CRF	common reporting format	MEDD	Ministère de l'écologie et du développement durable
DOM	<i>département d'outre-mer</i>	Mg	megagram (1 Mg = 1 tonne)
DPPR	Direction de la prévention des pollutions et des risques	MSW	municipal solid waste
EC	European Community	Mt	million tonnes
EIT	economy in transition	Mtoe	millions of tonnes of oil equivalent.
EF	emission factor	N	nitrogen
ERT	expert review team	N ₂ O	nitrous oxide
ETS	emissions trading scheme	NA	not applicable
EU	European Union	NE	not estimated
F-gas	fluorinated gas	NIR	national inventory report
GCIIE	Groupe de coordination et d'information sur les inventaires d'émission	NO	not occurring
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	OMINEA	Organisation et méthodes des inventaires nationaux des émissions atmosphériques
GJ	gigajoule (1 GJ = 10 ⁹ joule)	PFCs	perfluorocarbons
GWP	global warming potential	PJ	petajoule (1 PJ = 10 ¹⁵ joule)
HFCs	hydrofluorocarbons	QA/QC	quality assurance/quality control
IE	included elsewhere	SF ₆	sulphur hexafluoride
IEA	International Energy Agency	SO ₂	sulphur dioxide
		Tg	teragram (1 Tg = 1 million tonnes)
		TJ	terajoule (1 TJ = 10 ¹² joule)
		UNFCCC	United Nations Framework Convention on Climate Change
