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Report for the Stage 3 in-depth review of emission inventories submitted under the UNECE LRTAP Convention and EU National Emissions Ceilings Directive for:

STAGE 3 REVIEW REPORT
THE NETHERLANDS

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INTRODUCTION

1. The mandate and overall objectives for the emission inventory review process under the LRTAP Convention is given by the UNECE document '*Methods and Procedures for the Technical* Review *of Air Pollutant Emission Inventories reported under the Convention and its Protocols'* [(1)] – hereafter referred to as the 'Methods and Procedures' document.

2. This annual review has concentrated on SO_2, NOx, NMVOC, NH_3, plus PM_{10} & $PM_{2.5}$ for the time series years 1990 – 2013, reflecting current priorities from the EMEP Steering Body and the Task Force on Emission Inventories and Projections (TFEIP). HMs and POPs have been reviewed to the extent possible.

3. This report covers the Stage 3 centralised reviews of the UNECE LRTAP Convention and EU NEC Directive inventories of the Netherlands coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 22nd June 2015 to 26th June 2015 in Copenhagen, Denmark, and was hosted by the European Environment Agency (EEA). The following team of nominated experts from the roster of experts performed the review: generalist – Kristina Saarinen (Finland), Energy – Stephan Poupa (Austria) and Kristina Juhrich (Germany), Transport – Yvonne Pang (United Kingdom) and Jean-Marc Andre (France), Industry – Juan Luis Ortega (Spain), Solvents – Mirela Poljanac (Croatia), Agriculture – Michael Anderl (European Union) and Jim Webb (United Kingdom), Waste – Intars Cakars (Latvia).

4. Ole-Kenneth Nielsen (Denmark) served as lead reviewer. The review was coordinated by Katarina Marečková (EMEP Centre on Emission Inventories and Projections - CEIP).

[1] Methods and Procedures for the Technical Review of Air Pollutant Emission Inventories reported under the Convention and its Protocols. Note by the Task Force on Emission Inventories and Projections. ECE/EB.AIR/GE.1/2007/16 http://www.unece.org/env/documents/2007/eb/ge1/ece.eb.air.ge.1.2007.16.e.pdf

PART A: KEY REVIEW FINDINGS

5. The inventory is generally in line with the EMEP EEA Inventory Guidebook and the UNECE Reporting Guidelines. Transport emissions are reported based on fuels used.

6. Due to the quality of the IIR and the Netherland's responsiveness during the review the ERT was able to review the inventory in detail and provide a number of detailed recommendations. The ERT commends the Netherlands for providing replies to enable reviews.

7. ERT also noted that the Netherlands had carried out several improvements since the last review in 2010. The ERT commends the Netherlands for this development.

8. The ERT found the emission inventory and the IIR to be generally of good quality and generally complete. However, the ERT has noted with concern that underestimations of emissions are likely, for several different reasons (as detailed below).

INVENTORY SUBMISSION

9. The Netherlands submitted NFR tables under the CLRTAP on 15th February 2015, by the set deadline date of 15th February. The submission included data for the Protocol base years (1990) and a full time series for the years until 2013 (the most recent year) for the Protocol pollutants in the NFR 2014 format.

10. The submission under the NECD was received on 31.12.2014, by the set deadline date of 31.12., and included data for 2012-2013 in the NFR2014 format.

11. Projections with measures for SOx, NOx, NH_3, NMVOC, PM_{10} and $PM_{2.5}$ for 2020 and 2030 were submitted on 30th April in the NFR2014 format.

12. The Netherlands reported LPS data for 1990, 1995, 2000 and 2005 as well as gridded data (NH_3, SO_2, NOx, and $PM_{2.5}$) in the earlier submissions, e.g. 2010 data in 2012.

13. The IIR was submitted on 15th March 2015, by the set deadline date of 15th March.

14. Transport emissions are based on fuel used. During the review, the Netherlands informed the ERT that in the next submission, emissions would be reported based on fuels sold. The ERT welcomes this development.

15. The ERT found the inventory by the Netherlands to be of good quality, in line with the Reporting Guidelines and in general well documented in the informative inventory report (IIR).

KEY CATEGORIES

16. The submission by the Netherlands included a level Key Category Analysis (KCA) for SOx, NOx, NH_3, NMVOC, CO, PM_{10}, $PM_{2.5}$, Pb, Hg, Cd, PCDD/F and PAH-4 for 2013 and 1990, as well as for the trends 1990-2013. The analysis was carried out using the methodology from the Guidebook with a cumulative threshold of 80%, as recommended in the previous review report. The trend assessments aim to identify categories for which the trend is significantly different from that of the overall inventory. The ERT commends the NL for the comprehensive analysis.

17. The results of the KCA provided by the NL and the one carried out by the CEIP produced similar results. .

QUALITY

Transparency

18. The ERT recognises the level of effort undertaken by the Netherlands in providing an inventory with a significant level of detail, enabling the ERT to undertake a detailed review. The Party's IIR is detailed and well presented. The ERT found the inventory of the Netherlands to be generally transparent.

19. During the review the Netherlands submitted, on the ERT's request, a comprehensive set of IEFs and provided replies to the ERT's questions, which enabled the ERT to carry out a detailed assessment of the methodologies used in the Dutch inventory.

20. Instead of using default methods from the EMEP/EEA air pollutant emission inventory guidebook the Netherlands often applies country-specific methods with associated activity data and emission factors. The emission estimates are based on official statistics of the Netherlands (e.g. energy, industry and agriculture) and environmental reports provided by companies in the industrial sectors. Both nationally developed and internationally recommended emission factors are generally transparently documented in the IIR.

21. The ERT commends the Netherlands for providing information on the assumptions and AD used for the preparation of projections in the IIR, as well as on the preparation of gridded data.

22. The Netherlands explains the use of the notation keys NE and IE in the IIR. However, Table 1.3 is not transparent for NE and during the review the NL indicated that there was a need to update the table. The ERT welcomes this improvement. The ERT also identified some points (as listed below and described in detail in the sector chapters) where the transparency of the inventory could be enhanced, and recommends that the Netherlands further improves documentation for:

(a) information on emission factors (energy, paras 47-48; solvent use paras 107-108; agriculture 122, 128; and waste para 139) and AD (transport, paras 62, 67; industrial processes paras 72-74; solvent use paras 107, 108; and waste 133).

(b) background information on trends (industrial processes paras 93-95, 97-98; and solvent use 102)

(c) use of notation keys (energy, paras 50- 54, 56 ; transport 66, 68-69; industrial processes paras 79, 90; solvent use paras 99, 111-112, 117, 119-120; waste 130, 134-138)

(d) consistency of NFR tables and IIR (transport paras 66, 68-70; industrial processes para 89)

(e) information not available due to confidentiality restrictions (industrial processes, para 74)

(f) allocation of emissions, see under Comparability

23. The ERT recommends that the Netherlands completes the information provided in the IIR with a description on activities generating emissions and trends for activity levels, to enable an understanding of the drivers behind the emission trends.

24. The ERT also recommends that the Netherlands improves the transparency of the inventory by providing information on emissions from sources falling under confidentiality restrictions in such a way that confidentiality is maintained but a review of the quality of the inventory is still possible.

Completeness

25. The ERT acknowledges the effort to which the Netherlands has gone to provide estimates of emissions for all sub-sectors and all pollutants reviewed. The ERT found the inventory to be generally complete in terms of sources, pollutants, years and geographical coverage. However, the ERT identified several issues which may have led to an underestimation of emissions (as listed below), related to (a) not estimating emissions under national PRTR reporting thresholds, (b) not estimating emissions that are not reported by the plants, and (c and d) not estimating emissions for which methodologies exist:

(a) Emissions under the reporting thresholds of Dutch PRTR system are not included in the inventory. The ERT strongly recommends that the Netherlands estimates and reports these emissions. Already for the next inventory, the ERT recommends estimating the magnitude of these emissions currently excluded from the inventory, and including this information in the IIR. (See chapter “Accuracy”)

(b) Emissions that are likely to occur but are not reported by the plants reporting to the Dutch PRTR are not estimated. The ERT strongly recommends that the Netherlands estimates and reports these emissions. Already for the next inventory, the ERT recommends estimating the magnitude of these emissions currently excluded from the inventory, and including this information in the IIR.

(c) Several missing emissions from sources included in the inventory are listed in the chapter “Accuracy”.

(d) Gaps in the time series are listed in the chapter “Consistency, including recalculations and time-series”.

26. The ERT recommends that the Netherlands estimates the missing emissions or indicates the level of emissions and that it provides information on why the emissions are not estimated or included in the inventory.

Consistency, including recalculations and time-series

27. The ERT found the time series reported by the Netherlands to be generally consistent, with some deviations related to missing emissions in the time series from industrial processes: NFR 2A1 (SOx, particles, Hg, NH_3, PAH, CO); NFR 2B10a (all pollutants); and NFR 2C3 (PCDD/F) (see para 82).

28. The Netherlands has carried out several recalculations since the last submission in 2014 due to methodological changes in their inventory system (PRTR). The recalculations include also NH_3 emissions from road transport and agriculture due to improved methodologies and new data sources. HCB emissions have also been completed for all years.

The ERT commends the Netherlands for providing information on the impacts and justifications for the recalculations in the IIR.

Comparability

29. The ERT notes that the inventory of the Netherlands is comparable with those of other reporting parties. The allocation of source categories generally follows that of the EMEP/UNECE Reporting Guidelines, with deviations (listed below), and recommends that the Netherlands corrects the allocation of the relevant emissions:

(a) meat smoking under NFR 2H2 instead of NFR 1A4bi (para 55)

(b) coal combustion in 1B2d instead of 1A1 or 1A2 (para 58)

(c) mineral industry NFR 2A subcategories (para 89)

(d) ammonia and nitric acid production under NFR 1A2c instead of NFR 2B1 and NFR 2B2, respectively (para 91)

(e) chemical products under NFR 2B instead of NFR 2D3g (para 109)

(f) chemical industry under NFR 2B10a instead of separate NFR 2B subcategories (para 109)

(g) turkeys (3B4giii) and other poultry (3B4giii) under 3B4gii to be separated (para 123, 129)

30. Transport emissions are currently reported based on fuels used. However, the Netherlands has informed the ERT that they will provide estimates based on fuels sold in the next submission. The ERT welcomes this development.

CLRTAP/NECD comparability

31. According to the results of inventory comparisons carried out by the CEIP, there are differences in the data between the submissions under the CLRTAP and NECD, due to the fact that the recalculated data has not yet been reported under the UNFCCC because of the challenges presented by the UNFCCC CRF Reporter. The ERT commends the NL for reporting consistent data under the CLRTAP and the NECD.

Accuracy and uncertainties

32. The ERT found that in the inventory of the Netherlands it js likely that there are underestimates of emissions, because

(a) Emissions below the Dutch thresholds for reporting under the national PRTR system are not included in the inventory (paras 25). The ERT therefore strongly recommends that the Netherlands estimates the magnitude of emissions of pollutants excluded from the inventory, complements the inventory by specifying the estimated magnitude of currently missing emissions and includes this information in the IIR.

(b) Emissions from oil and gas productions plants that are no longer reported are currently reported as NO (para 50). The ERT strongly recommends that the Netherlands investigates

whether these emissions occur, and estimates emission levels and includes them in the inventory, and meanwhile changes the notation key to NE.

(c) Other missing emissions:

- Energy: particulate and CO emissions (NFR 1A3ei, para 52), PCBs (NFR 1A4ai and 1A4bi, para 53), PCB and heavy metals (NFRs 1A4ci and 1A5a, para 54), NMVOCs (NFR 1B2av, para 56), SO_2, NO_x, CO and particulate emissions (NFR 1B2aiv, para 57)
- Industrial processes: several gaps (para 82), TSP (2B10a and 2C1, para 92), PM, NMVOC and NH3 (2H1, para 96)
- Solvent use: BC (2D3i, para 115), Hg (2D3a, para 118)
- Waste: all pollutants (5B2 para 134), NMVOC (5D1 & 5D2, paras 137-138)

33. In addition, the ERT found some (a) errors and (b) inaccuracies in the methodology, and recommends that the Netherlands corrects them:

(a) PCDD/F, NH3 and CO from 2C1 (paras 93-94), PAHs from 2C3 (para 95), particle emissions from NFR 2H1 (para 96), PAHs, CO and NH3 from NFR 2D3i (paras 111-116)

(b) calculation of emissions from point sources using weighted averages over several years (para 45) and checking the emission factor for zinc in NFR 1A1a (para 48).

34. In the IIR, the Netherlands states under Chapter 1.7 that the uncertainties are based on emissions in 2000 and that several improvements in the AD and the methods used have been implemented since and that it is foreseen to update the UCA in the next years. To a question about this issue raised by the ERT, the NL replied that work on updating the uncertainties was in progress and that a new automated system using Monte Carlo analysis was being programmed. The Netherlands expects the UC calculation system to be ready for use for reporting under the NECD at the end of 2015. The ERT welcomes this development and repeats its recommendation of the previous review that the Netherlands should carry out an uncertainty assessment to the next submission.

Verification and quality assurance/quality control approaches

35. The Netherlands presents a detailed QA/QC and a verification plan in the IIR based on in-built checks in the calculation system related to consistency, completeness and the accuracy of data. In addition, outliers are checked at sector level in relation to annual changes in emissions and activity data.

36. Regarding data reported by the plants, the competent authority and the inventory team perform checks and contact the companies to verify the data submitted.

37. The ERT commends the Netherlands for the thorough quality work. However, it recommends further enhancements of the quality of emissions from very small sources.

38. The ERT also recommends that the Netherlands provides sector-specific information on applied QA/QC procedures and information on the results of the QA/QC work.

FOLLOW-UP TO PREVIOUS REVIEWS

39. The ERT commends the Netherlands for carrying out the following improvements identified by the previous Stage 3 review in 2010:

(a) Improvement of transparency through documentation of the calculation methodologies and by estimating missing emissions (NFRs 2D3 and 3Da2b-c).

(b) Key Category Analysis using the methodology from the Guidebook with a cumulative threshold of 80% including level and trend assessments.

(c) Detailed responses to the questions identified in the Stage 2 review carried out by CEIP.

40. The ERT notes that the Netherlands has not yet included an uncertainty analysis in the IIR. However, the Netherlands is working on the provision of an uncertainty analysis for the next submission.

AREAS FOR IMPROVEMENTS IDENTIFIED BY NETHERLANDS

41. On page 137 of the IIR the Netherlands states: “During the compilation process of the inventory reports, activities have been initiated for future improvements. However, at this moment, there is no finalized improvement plan available.” The ERT recommends that the Netherlands develops and reports an improvement plan in the IIR with the next submission.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE NETHERLANDS

CROSS CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

42. The ERT recommends that the Netherlands:

(a) improves the accuracy and completeness of the inventory by estimating and reporting emissions from missing sources and by correcting underestimated emissions as described in paragraphs 25 and 31, as well as by correcting methodologies as described in paragraph 32,

(b) improves the comparability of the inventory by correcting the allocation of emissions as described in paragraph 29,

(c) improves the consistency of the inventory by filling the gaps in the time series as described in paragraph 27,

(d) improves the transparency of the inventory as described in paragraphs 22-24,

(e) describes sector-specific QA/QC activities,

(f) develops an inventory improvement plan, and

(g) carries out an uncertainty analysis

SECTOR SPECIFIC RECOMMENDATIONS FOR IMPROVEMENTS IDENTIFIED BY ERT

ENERGY

Review Scope

Pollutants Reviewed		All		
Years		1990 – 2013		
NFR Code	**CRF_NFR Name**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
1A1a	Public electricity and heat production	X		X
1A1b	Petroleum refining	X		X
1A1c	Manufacture of solid fuels and other energy industries	X		X
1A2a	Iron and steel	X		
1A2b	Non-ferrous metals	X		X
1A2c	Chemicals	X		X
1A2d	Pulp, Paper and Print	X		X
1A2e	Food processing, beverages and tobacco	X		X
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	X		X
1A2gviii	Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	X		
1A3ei	Pipeline transport	X		X
1A3eii	Other (please specify in the IIR)		X	
1A4ai	Commercial/institutional: Stationary	X		X
1A4bi	Residential: Stationary	X		X
1A4ci	Agriculture/Forestry/Fishing: Stationary	X		X
1A5a	Other stationary (including military)	X		X
1B1a	Fugitive emission from solid fuels: Coal mining and handling	X		
1B1b	Fugitive emission from solid fuels: Solid fuel transformation	X		
1B1c	Other fugitive emissions from solid fuels	X		
1B2ai	Fugitive emissions oil: Exploration, production, transport	X		
1B2aiv	Fugitive emissions oil: Refining / storage	X		X
1B2av	Distribution of oil products	X		X
1B2b	Fugitive emissions from natural gas (exploration, production, processing, transmission, storage, distribution and other)	X		X
1B2c	Venting and flaring (oil, gas, combined oil and gas)	X		X
1B2d	Other fugitive emissions from energy production	X		X

General recommendations on cross-cutting issues.

Transparency:

43. There is a comprehensive description of QA/QC procedures for PRTR data available in the Dutch IIR. It is explained that QC checks built into the work plan focus on issues such as consistency, completeness and the accuracy of emission data. The checks of outliers are performed on a more detailed level of the sub-sources in all sector background tables: annual changes in emissions; annual changes in activity data; annual changes in IEFs and level values of IEFs. But implied emission factors or emission factors for the main pollutants of large combustion plants are not published in the IIR.

44. The Dutch IIR's page 32 shows the trend for $PM_{2.5}$ emissions. However, the graph is confusing. Emissions from small combustion plants are not included in the sector 1A but in the category "Other". The ERT encourages the Netherlands either to restructure the graph or to delete it.

45. During the review the Netherlands explained that all reported data from operators used measured data as well as default data. The ERT recommends improving the calculation method. Only a few pollutants were measured continuously. In case of single measurements, or the use of values from relevant literature, an interpretation of annual EF changes is difficult because of uncertainties. Therefore it is better to calculate the emission factor as a weighted average for several years and use it for those parts of the time series where no changes in abatement technologies are expected. Using such an approach should assure completeness and avoid problems with operators not reporting some pollutants in specific years due to the emissions being below a threshold.

Completeness:

46. The Netherlands explained that emission data were used from individual companies which report their emissions for E-PRTR. The statistical bureau in the Netherlands (CBS) uses their detailed statistics on fuel consumption for the emission estimates. They have fuel consumption statistics per company and use it to determine which part of the fuel consumption is already included in the inventory from the individually registered companies. The remaining fuel consumption is used to calculate the emissions from the not-individually registered companies. This is an appropriate procedure to assure consistency with the national energy balance. Besides, the Netherlands explained that for some companies, the emissions are below the reporting threshold and therefore fewer emissions are reported. Consequently, the total emissions from large combustion plants have been underestimated in several cases, depending on the pollutant.

Sub-sector Specific Recommendations.

1.A.1.a Public electricity and heat production – Main pollutants

47. During the review the ERT received, upon request, a comprehensive set of IEFs and recommends publishing IEF data on the most important fuels in the IIR in order to increase transparency. In cases where emission factors deviate considerably from those of other countries, an explanation should be provided in the IIR. For example, biogas has an SO_2 emission factor of 1.49 g/GJ and an NO_X emission factor of 39.8 g/GJ. The German values are 78 g/GJ (SO_2) and 153 – 306 g/GJ (NO_X), depending on the situation. Such a low SO_2

emission factor could be a result of desulphurization, which is not common in Europe. The ERT recommends reviewing the values and providing relevant information in the next IIR. Besides, the ERT encourages the Netherlands to expand the description of the combustion technology as well as the abatement technology used in the IIR, especially in cases of national peculiarities.

1.A.1.a Public electricity and heat production – Zn

48. The ERT found that the share of Zn in sector 1.A.1.a is very high compared to other Parties. The Netherlands explained that the main driver was waste incineration and provided the relevant emission factor, which is 0.183 kg Zn/TJ. It seems to be very high compared to the emission factors of Parties with similar waste incineration practices (e.g. the German emission factor is 0.0021 kg/TJ and the Danish emission factor is 0.00233 kg/TJ). The ERT notes that the Dutch TSP emission factor as well as the Cd and Hg emission factors are within the range of the German and Danish values. The ERT encourages the country to check the accuracy of this emission factor.

1.A.1.b Petroleum refining, 1.A.2.a Iron and steel, 1.A.2.b Non-ferrous metals, 1.A.2.c Chemicals, 1.A.2.d Pulp, paper and print & 1.A.2.e Food processing, beverages and tobacco – Heavy metals and POPs

49. In several cases the notation key NO is used although emissions can be expected from these sources. The ERT recommends changing the notation key from NO to NE or, preferably, calculating emissions.

1.A.1.c Manufacture of solid fuels and other energy industries – All pollutants except SO_2 and NO_x

50. In source category 1.A.1.c all emissions except NO_X and SO_2 have been reported as NO. During the review the Netherlands explained that emissions from coking plants were reported in source category 1.A.2.a. Emissions from oil and gas production are not reported any more by the oil and gas companies and therefore, these emissions are not included in the NFR tables. The ERT recommends changing the notation key from NO to IE for coking plants and from NO to NE for oil and gas companies or, preferably, that the Netherlands calculates the emissions and reports them in future submissions.

1.A.2.f Non-metallic minerals – All pollutants except CO

51. In source category 1.A.2.f all emissions except CO are flagged as NO. The Netherlands explained that all other emissions from the mineral industry were reported in source category 2.A.6. The ERT recommends changing the notation keys from NO to IE and explaining the allocation of the emissions in the IIR.

1.A.3.ei Pipeline transport & 1.B.2.b Fugitive emissions from natural gas – All pollutants

52. According to the NFR tables, emissions from source category 1.A.3.ei (compressor stations) are reported in source category 1.B.2.b. But in source category 1.B.2.b only NMVOC emissions are reported. The ERT recommends changing the notation keys for the main pollutants, PM and CO, from NA and NO to NE. The ERT encourages the Netherlands to calculate emissions by using emission factors from other countries, since default values are

not available. Depending on the combustion technology (gas turbine, engine) used, emission factors from the source category 1.A.1.a can be used.

1.A.4.a.i Commercial/institutional: Stationary & 1.A.4.b.i Residential: Stationary – PCBs

53. In source category 1.A.4a.i and 1.A.4.b.i PCB emissions are missing. The ERT recommends changing the notation key from NO to NE or, preferably, calculating emissions by using default emission factors.

1.A.4.c.i Agriculture/Forestry/Fishing: Stationary and 1.A.5.a Other stationary (including military) – Heavy metals and PCBs

54. The Netherlands does not report PCB and HM emissions from the source categories 1.A.4.ci and 1.A.5.a. The ERT recommends changing the notation key from NO to NE or calculating emissions by using default emission factors.

1.A.4.b.i Residential: Stationary - All pollutants

55. The ERT recommends reallocating emissions from meat smoking from source category 1.A.4.bi to source category 2.H.2.

1.B.2.a.v Distribution of oil products – NMVOC

56. In source category 1.B.2.a.v no NMVOC emissions are reported. The ERT recommends changing the notation key from NO to NE or calculating emissions.

1.B.2.c Venting and flaring (oil, gas, combined oil and gas) – All pollutants

57. According to the NFR tables emissions from 1.B.2.c are included in source category 1.B.2.aiv. But in source category 1.B.2.aiv only NMVOC emissions are reported. The ERT recommends reporting the relevant emissions (SO_2, NO_X, TSP, PM and CO) in source category 1.B.2aiv.

1.B.2.d Other fugitive emissions from energy production – HCB

58. HCB emissions from coal combustion in power plants are reported in source category 1.B.2.d. The ERT recommends reallocating these emissions to source category 1.A.1.a or, in the case of industrial power plants, to the relevant subcategory of 1.A.2.

TRANSPORT

Review Scope

Pollutants Reviewed		All		
Years		1990 – 2013		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
1A2gvii	Mobile Combustion in manufacturing industries and construction: (please specify in the IIR)	X		X
1A3ai(i)	International aviation LTO (civil)	X		X
1A3ai(ii)	International aviation cruise (civil)		X	X
1A3aii(i)	Domestic aviation LTO (civil)	X		X
1A3aii(ii)	Domestic aviation cruise (civil)	X		X
1A3bi	Road transport: Passenger cars	X		X
1A3bii	Road transport: Light duty vehicles	X		X
1A3biii	Road transport: Heavy duty vehicles and buses	X		X
1A3biv	Road transport: Mopeds & motorcycles	X		X
1A3bv	Road transport: Gasoline evaporation	X		X
1A3bvi	Road transport: Automobile tyre and brake wear	X		X
1A3bvii	Road transport: Automobile road abrasion	X		X
1A3c	Railways	X		X
1A3di(ii)	International inland waterways	X		X
1A3dii	National navigation (shipping)	X		X
1A4aii	Commercial/institutional: Mobile	X		X
1A4bii	Residential: Household and gardening (mobile)	X		X
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	X		X
1A4ciii	Agriculture/Forestry/Fishing: National fishing	X		X
1A5b	Other, Mobile (including military, land based and recreational boats)	X		X
1A3di(i)	International maritime navigation	X		X
1A3	Transport (fuel used)	X		

General recommendations on cross-cutting issues.

Transparency:

59. The ERT notes that the quality of the descriptions of the methodologies used for inventory compilation (at least within the Transport sector) is clear and mostly transparent. The ERT asks the Netherlands to further develop the descriptions provided within the IIR. For example, the ERT notes that there is insufficient information provided about EFs and IEFs for some sub-categories within the Transport sector, see paragraphs 65 and 67. Therefore, the

ERT warmly encourages the Netherlands to include such information within future IIRs (and not only in a separate file).

Completeness:

60. The ERT considers the Transport sector to be complete and comprehensive.

Consistency including recalculation and time series:

61. The ERT notes that since the last review (2010), the Netherlands has provided separate information on recalculations in each sub-sector. The ERT encourages the Netherlands to continue and to be as clear as possible, by providing such information on each pollutant for example in a table which summarises all the relevant information (AD, EF, IEF and emissions before and after the recalculation).

Comparability:

62. During the review, the ERT noted that no activity data (AD) is provided in the NFR tables. AD in the NFR tables are helpful to compare IEFs with other countries. The ERT asked if such information was planned and the Netherlands has confirmed this. The ERT recommends that the Netherlands completes the NFR tables with AD in the next submissions.

Accuracy and uncertainties:

63. The ERT encourages the Netherlands to implement sub-sector specific QA/QC procedures for road transport, navigation and non-road machinery and to use the results of the QA/QC work to prioritise further improvements.

Improvement:

64. The ERT notes the quality of the information provided on improvements. The ERT encourages the Netherlands to continue providing detailed information on included and planned improvements.

Sub-sector Specific Recommendations.

1.A.3: All subsectors – All Pollutants

65. The ERT notes that in many passages of the IIR, the Netherlands explains that the methodologies used for all transport sub-sectors are explained in an external document (Klein et al, 2015). The ERT enquired about the document. During the review, the Netherlands provided a draft version of the document because the final one had not been finalised. The ERT encourages the Netherlands to finalise the document and encourages the Netherlands to also include the information directly in the next IIR submissions, together with the information on the emission factors provided to the ERT during the review week, for the purpose of transparency.

1.A.3.b.v Road transport: Gasoline evaporation, 1.A.3.b.vii Road transport: Automobile road abrasion & 1.A.3.c Railways – Heavy metals

66. The Party explains, in their IIR, the notation keys used. But the ERT did not find the notation key NE for the above NFR codes in the NFR tables (replaced by NA/NO). The

Netherlands answered during the review that the IIR was not up to date and did not reflect the correct codes in the NFR tables. The ERT recommends consistency for both IIR and NFR tables.

All transport subsectors - Activity data

67. The ERT notes that no activity data are available in the NFR tables. The ERT found that it was not easy to compare the implied emission factors with those of other countries. The ERT asked the Netherlands if there were plans to provide such information for the next submission of the IIR and the NFR tables. The Netherlands answered during the review that the AD would be provided in the next IIR submissions when the Netherlands would be reporting on the basis of fuel sold. The ERT encourages the Netherlands to provide such information for the purpose of transparency and comparability.

1.A.3.a.ii(ii) Domestic aviation cruise (civil) – All pollutants

68. The ERT identified an inconsistency in the use of notation keys between the IIR and the NFR tables for the above sub-sector. The Netherlands answered that there was an error in the IIR. The ERT recommends that the Netherlands improves the IIR for the next submissions

1.A.3.e Pipeline transport – All pollutants

69. The ERT identified an inconsistency in the use of the notation (IE) key between the IIR where no information is provided and the NFR table where information is given for the above sub-sector. The Netherlands answered that there was an error in the IIR which would be corrected in the next IIR submission with an “NO” notation key. The ERT recommends that the Netherlands improves both the IIR and the NFR tables to ensure consistency.

1.A.3.a.i International aviation LTO (civil) – NMVOC

70. The Netherlands explains in the IIR that this sub-sector contains emissions of NMVOCs from “the storage and transfer of kerosene”. The ERT points out that these emissions should not be reported in this sub-sector (1A3ai) but under 1B2 (Fugitive Emissions from liquid fuels and NG). The 1A3ai sub-sector should only contain emissions from aircraft during LTO. The Netherlands has informed the ERT that the IIR does not reflect the reality (whereas the NFR tables do) and explained that it would make appropriate corrections for the next IIR submission. The ERT encourages the Netherlands to improve both the IIR and the NFR tables to ensure consistency.

INDUSTRIAL PROCESSES

Review Scope

Pollutants Reviewed		All pollutants		
Years		1990 – 2013		
NFR Code	**CRF_NFR Name**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
2A1	Cement production	X		X
2A2	Lime production	X		X
2A3	Glass production	X		X
2A5a	Quarrying and mining of minerals other than coal	X		X
2A5b	Construction and demolition	X		X
2A5c	Storage, handling and transport of mineral products	X		X
2A6	Other mineral products (please specify in the IIR)	X		X
2B1	Ammonia production	X		X
2B2	Nitric acid production	X		X
2B3	Adipic acid production		NO	
2B5	Carbide production		NO	
2B6	Titanium dioxide production		NO	
2B7	Soda ash production		NO	
2B10a	Chemical industry: Other (please specify in th IIR)		NO	
2B10b	Storage, handling and transport of chemical products (please specify in the IIR)		NO	
2C1	Iron and steel production	X		X
2C2	Ferroalloys production		NO	
2C3	Aluminium production	X		X
2C4	Magnesium production		NO	
2C5	Lead production	X		
2C6	Zinc production	X		
2C7a	Copper production	X		
2C7b	Nickel production		NO	
2C7c	Other metal production (please specify in the IIR)		NO	
2C7d	Storage, handling and transport of metal products (please specify in the IIR)		NO	
2H1	Pulp and paper industry	X		X
2H2	Food and beverages industry	X		X
2H3	Other industrial processes (please specify in the IIR)	X		X
2I	Wood processing	X		
2J	Production of POPs		NO	
2K	Consumption of POPs and heavy metals (e.g. electrical and scientific equipment)		NO	
2L	Other production, consumption, storage, transportation or handling of bulk products (please specify in the IIR)		NO	

General recommendations on cross-cutting issues

Transparency:

71. The previous Stage 3 review report revealed that the Netherlands' inventory was not transparent enough. Accordingly, the ERT recommended including more information on activity data and methodologies. The current ERT notes that the issue persists: the Netherlands does not report activity data in any of the categories of the Industrial Processes sector. Additionally, the methodology descriptions provided are scarce.

72. During the review week, the ERT raised many questions about activity data, implied emission factors and methodologies. The ERT commends the Netherlands on the quick replies provided to these questions. Nevertheless, the ERT found that most of the answers were not transparent, referring to confidentiality issues in the majority of cases (see sector-specific recommendations).

73. Regarding the bottom-up approach followed by the country in the Industrial Process sector, the Netherlands has explained that data on emissions are obtained from Annual Environmental Reports (AER), that are validated by the Competent Authority (Provincial governments) . The Netherlands referred to the confidentiality of the production and energy data from individual companies as the reason for not providing either activity data or implied emission factors to the ERT.

74. The Netherlands explained that even though the data are confidential, the inventory team has access to this data. The ERT did not receive the confidential data, so it was not possible to perform an in-depth review. The ERT encourages the Netherlands to improve the transparency of reporting by finding ways to provide confidential information (reporting in an aggregated way, reporting information already provided to the UNFCCC, etc.).

Completeness:

75. The ERT notes that the 2015 submission of the Netherlands is not complete, see sector-specific recommendations.

76. The Netherlands explained that there was "an allocation problem" that the ERT had found that affected the following categories: 2A1, 2A3, 2A6, 2B10a, 2C3, see paragraph 82.

77. The ERT found that also categories 2H2 and 2H3 were not complete, see paragraph 96.

78. Additionally, the Netherlands explained that for several sources TSP emissions were missing and as mentioned in the IIR 2015 (page 92), the Netherlands indicated that they were trying to resolve the issue.

79. The ERT also found that there were problems with the notation keys in the following categories: 2A5b, 2B1, 2B2. Also, both the notation keys IE and NO are used in sources of the same category.

80. The Netherlands has informed the ERT that the notation keys of the IPPU sector will be improved and included in next submission. The ERT encourages the Netherlands to do so.

Consistency including recalculation and time series:

81. The ERT found that not all the time series of the Industrial Processes sector are consistent. Sector-specific details are provided below.

82. The Netherlands provided information on the following issues raised by the ERT, referring to an allocation problem that would be corrected for the next submission:

Category	Pollutant	Issue
2A1	SO_x	For the series 1990-2013, there are only emissions for the year 2005 and for 2008-2013.
2A1	PM_{10}	There are no emissions for the years 2011 and 2012.
2A1	$PM_{2.5}$, Hg, NH_3	The series of these pollutants have several gaps, the time series are not complete.
2A3, 2A6, 2B10a	All	The series of these pollutants have several gaps, the time series are not complete.
2A6	PAHs	There are no emissions reported for 2002 & 2003.
2A6	CO	The trend in CO emissions changes in 2009. There is no explanation.
2C3	PCDD/F	Emissions stopped in 2000.

The ERT recommends that the Netherlands solves these issues for the next inventory submission.

83. The Dutch IIR includes, in section 9, a description of the recalculations and other changes to the inventory. The ERT commends the Netherlands for this information and encourages the country to provide information on recalculations at NFR category level in future editions.

Comparability:

84. The ERT could not assess the comparability of the Dutch inventory due to the aforementioned lack of activity variables and methodology descriptions.

Accuracy and uncertainties:

85. The Netherlands informed the ERT that the inventory team had access to the information contained in the Annual Environmental Reports (AER).validated by the competent authority. Besides that, the inventory team performed the following checks: comparing emissions with emissions from previous years (trend), check if jumps and dips can be explained; if no explanation(s) can be found, the Province and/or Company is contacted. Finally, a check of the NFR tables and whether they are properly filled is performed. The ERT commends the Netherlands on this approach.

86. The ERT asked the Netherlands about several outliers and also about the explanation provided regarding trends and tendencies. Regarding very small sources of emissions, the answer provided by the Netherlands was that not much attention was paid to very small sources of emissions. The ERT recommends that the Netherlands performs the same quality controls for all sources of emissions, in order to improve the quality of the inventory in terms of consistency and accuracy.

Improvement:

87. The ERT notes that the Netherlands does not have an improvement plan, as stated in the IIR, page 137. The ERT encourages the Netherlands to implement an improvement plan for the inventory.

Sector-pecific Recommendations.

2.A.2 Lime production & 2.A.5 – All Pollutants

88. The ERT noted that the explanation given in the IIR regarding categories 2A2, 2A5a, 2A5b and 2A5c did not correspond with the information provided in the NFR tables. The Netherlands responded that the process emissions from 2A5a were NA, that emissions from 2A5b were mistakenly allocated to the wrong category and that emissions from category 2A5c were included in 2H3. Besides, 2A2 emissions were included in 2A6 categories, due to the fact that lime production only occurs in the sugar production process. The ERT acknowledges the answer provided by the Netherlands and recommends that the Netherlands resolves these issues for the next submission, correcting the error found in category 2A5b, explaining in detail the allocation to the 2.A.5 category and ensuring that the NFR tables include the same information as the IIR.

2.A.5b Construction and demolition - PM

89. The ERT noted that PM was labelled as "NO", whereas other emissions were reported in this category. The Netherlands answered that the notation key was not correct and that the notation keys of the IPPU sector would be corrected for the next inventory submission. The ERT recommends that the Netherlands implements these corrections.

2.B.1 Ammonia production & 2.B.2 Nitric acid production – All Pollutants

90. The ERT noted that the Netherlands had not reported emissions for ammonia and nitric acid production, even though production figures had been provided for UNFCCC reporting. The Netherlands responded that it was not possible for them to separate combustion and process emissions, so all the emissions were reported under category 1A2c. Additionally, the Netherlands explained that NH_3 emissions had mistakenly been allocated to 2B10a. The ERT appreciates the clear answer provided by the Netherlands and recommends that the Netherlands resolves this issue for the next submission by labelling the sources allocated to 1A2c as "IE" and by allocating NH_3 emissions properly.

2.B.10a Chemical industry other & 2.C.1 Iron and steel production

91. The ERT notes that the time series of TSP is incomplete, while PM_{10} and $PM_{2.5}$ are reported for the entire time series. The Netherlands has explained that for several sources TSP emissions are missing. In the IIR 2015, page 92, the Netherlands mentions that they are working on resolving this issue. The ERT commends the Netherlands on this.

2.C.1 Iron and steel production – PCDD/F

92. The ERT found that the inter-annual variation in emissions of PCDD/F from the production of iron and steel was higher than 100 %. The Netherlands responded that these emissions are obtained from Annual Environmental Reports (AER), that are validated by the Competent Authority (Provincial government). Additionally, the Netherlands answered that

because production and energy data from individual companies were confidential, it was not possible to determine/calculate an IEF. The ERT recommends that the Netherlands verifies and finds explanations for the variations in the data provided by the regional authorities. Additionally, the ERT recommends that the Netherlands verifies the conditions under which measured values are obtained and, if they are not representative, estimates emissions using default/national emission factors.

2.C.1 Iron and steel production & 2.C.3 Aluminium production – NH_3, CO

93. The Netherlands could not explain the following issues regarding trends in emissions: High values for NH_3 emissions for the years 2012 & 2013 for iron and steel production, a drop in CO emissions since 2008 for iron and steel production and the NH_3 emission value for the year 1999 which seems to be an outlier. The Netherlands answered that not much attention was paid to small sources, as priority was given to other categories with higher contributions in terms of emissions. The ERT recommends that the Netherlands performs the same quality controls for all sources of emissions, in order to improve the quality of the inventory in terms of consistency and accuracy.

2.C.3 Aluminium production – PAHs

94. The ERT found that the inter-annual variation in emissions of PAHs from the production of aluminium was higher than 100 %. The Netherlands responded that these emissions were obtained from Annual Environmental Reports (AER), that are validated by the Competent Authority (Provincial government).. Additionally, the Netherlands answered that because production and energy data from individual companies were confidential, it was not possible to determine/calculate an IEF. The ERT recommends that the Netherlands verifies and finds explanations for the variations in the data provided by the regional authorities. Additionally, the ERT recommends that the Netherlands verifies the conditions under which measured values are obtained and, if they are not representative, estimates emissions using default/national emission factors.

2.H.1 Pulp and paper industry, 2.H.2 Food and beverages industry & 2.H.3 Other industrial processes – PM, NH_3, NMVOC

95. The Netherlands informed the ERT that the emissions of PM for 1996 – 1999 in category 2H1 were not correct and would be updated for the next inventory submission. Additionally, the Netherlands informed the ERT that the NMVOC and NH_3 emissions would be completed for the next inventory submission. The ERT recommends that the Netherlands resolves this issue for the next inventory submission.

2.H.2 Food and beverages industry – NMVOC and PM

96. The Netherlands informed the ERT that abatement technologies had been implemented in the sector. New equipment had been implemented to process soya beans and seeds. With the introduction of the new equipment less hexane per tonne processed seeds is needed resulting in a decrease in emissions. Also, fabric filters have been installed reducing the emissions of PM. The ERT encourages the Netherlands to include this information in the IIR to explain the trends in the emissions of this category.

2.H.3 Other industrial processes – NMVOC and PM

97. The Netherlands informed the ERT that several abatement technologies had been implemented in the sector. These included: applying crust formers as covering layer during

storage, wet keeping of the product during transhipment. PM_{10} emissions from all the other sectors have been reduced after the installation of fabric filters and the installation of vapour return systems in a number of companies has reduced NMVOC emissions from handling and storage. NMVOC emissions from other sources have been reduced by the transition to water-based products. The ERT recommends that the Netherlands includes this information in the IIR to explain the trends in the emissions of this category

SOLVENTS

Review Scope

Pollutants Reviewed		All pollutants		
Years		1990 – 2013		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
2D3a	Domestic solvent use including fungicides	X		X
2D3b	Road paving with asphalt	X		X
2D3c	Asphalt roofing	X		X
2D3d	Coating applications	X		X
2D3e	Degreasing	X		X
2D3f	Dry cleaning	X		X
2D3g	Chemical products	X		X
2D3h	Printing	X		
2D3i	Other solvent use (please specify in the IIR)	X		X
2G	Other product use (please specify in the IIR)	X		X

General recommendations on cross-cutting issues

Transparency:

98. The ERT considers the use of notation keys by the Netherlands in the IIR and the NFR tables to be not completely transparent, e.g. according to the NFR tables, for the source category 2.D.3.b the Netherlands uses the notation key “IE” with a note that the emissions are included in category 2.G and for the category 2.G, the Netherlands uses the notation key “NO”. At the same time, according to the IIR, pg.91, the source category 2.G is included in 2.D.3.i. See also paragraphs: 111, 112, 117, 119, 120. The ERT recommends that the Netherlands improves the use of the notation keys for the IPPU sector.

99. The previous ERT recommended that the Netherlands should improve the transparency of the IIR by adding activity data and EFs for the sector. The ERT considers that the problem still exists and that the IIR and the NFR tables are not transparent regarding activity data and implied emission factors for the Solvent sector. The ERT reiterates its recommendation that the Netherlands should improve the transparency of the inventory (IIR and NFR tables) by adding missing activity data and implied emission factors for the next submission. If the Netherlands is unable to report activity data and emission factors, the ERT recommends that this should be clearly noted in the IIR, along with a rationale for not providing the information.

Completeness:

100. The ERT considers the Solvent sector to be incomplete and incomprehensive with poor levels of detail for activity data and emission factor usage. The ERT recommends that the Netherlands completes the inventory by providing the missing activity data and emission factors for the next submission.

Consistency including recalculation and time series:

101. The ERT noticed a few inconsistencies regarding the trend in pollutants emissions for the Solvent sub-sectors, see paragraphs 112, 113, 114 and 115. The ERT encourages the Netherlands to correct these inconsistencies for the next submission.

Comparability:

102. The ERT could not perform a comparability assessment for most of the sub-categories of the solvent sector due to the above mentioned lack of activity data and emission factors. The ERT was only able to compare the source category 2.D.3.d Coating applications where the activity rates and implied emission factors for NMVOC are comparable with those of other Parties.

Accuracy and uncertainties:

103. The ERT noted that there is no uncertainty analysis for the Solvent sector, which is the key source of NMVOC emissions. The ERT recommends that the Netherlands collects the required data for undertaking an uncertainty analysis for the solvent Sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

104. The Netherlands describes general QA/QC procedures in the IIR. The ERT has noticed that there is no description on the QA/QC procedures for the Solvent sector. During the review week the ERT asked the Netherlands to provide details on which checks are performed by the Dutch inventory team. The Netherlands provided the information on checks performed on emissions as requested. However, the ERT noticed that no checks regarding activity data and implied emission factors were mentioned. The ERT encourages the Netherlands to include the information provided to the ERT during the review week in the next IIR and to upgrade QC procedures by checking trends in activity data and implied emission factors.

Improvement:

105. The ERT notes that no specific improvements are planned for the Solvent sector. However, during the review week the ERT noted a number of areas for improvement in the Solvent sector. The ERT encourages the Netherlands to adopt a plan for improving the Solvent sector.

Sector-specific Recommendations.

2.D.3.d Coating applications - NMVOC

106. The previous ERT recommended that the Netherlands should improve the transparency of the IIR by including activity data and EFs used for emission estimates, and by providing supporting text for the emission trends. The ERT notes that the Netherlands has improved the transparency of the IIR by including the activity data used for NMVOC emissions estimates and commends the Netherlands on this improvement.

2.D.3.e Degreasing and 2.D.3.f Dry cleaning - NMVOC

107. The previous ERT recommended that the Netherlands should collect activity data for the years from 2000 onwards if possible, and report recalculated emissions for the relevant period to avoid under/overestimations of NMVOCs in these categories. The ERT notes that NMVOC emissions are included in the NFR tables and that NMVOC emission trends are consistent throughout the whole time series. The ERT commends Netherland on this improvement. However, in the IIR there is no information regarding the two sectors 2.D.3.e Degreasing and 2.D.3.f Dry cleaning. The IIR does not contain any information regarding the methodology, activity data and emission factors used for these categories. The ERT strongly recommends that the Netherlands includes the required information in the next IIR to improve transparency and completeness.

2.D.3.g Chemical products - NMVOC

108. The previous ERT identified that the NMVOC emissions from the source category Chemical products were reported as Included Elsewhere (under 2.B – Industrial Processes, Chemical industry). Moreover, in the IP chapter it is written that "…due to allocation problems, all emissions from the chemical industry (2.B) are reported in category 2.B.5.a" (NFR2013 2.B.10.a). Because 2.B category is a key category for several pollutants, disaggregation of the reported emissions is desirable. The previous ERT encouraged Netherlands to improve the inventory, to allow reporting of emissions from production and processing of related chemical products under 2.D.3.g. The ERT has noticed that the problem still persists. Following the review, Netherlands concluded that 2.B.10.a could not be split into 2.B.10.a and 2.D.3.g. The ERT encourages the Netherlands to carry on investigating the feasibility of separating these two sectors in the future. The ERT encourages the Netherlands to adopt a plan for collecting activity data for the source category 2.D.3.g Chemical products by e.g. using statistical information on sold products.

2.D.3.i Other solvent use – NMVOC, NH_3, BC, PCDD/F, PAHs, CO, Pb

109. The previous ERT recommended that the Netherlands should include an explanation for the source category 3.D.3 Other Product Use (NFR 2013 2.D.3.i Other solvent use) regarding the emission estimate of emissions from the preservation of wood in their IIR to improve transparency. The ERT notes that only part of the explanation provided has been included in the IIR. The ERT recommends that the Netherlands includes a full explanation for the emission calculations. Also, the ERT recommends that the Netherlands includes missing activity data and emission factors for all activities under this source category.

110. During the review week the ERT noticed that for the period 1991-1994 the notation key "NO" (for PCDD/F emissions) had been used by the Netherlands. The Netherlands provided an explanation, i.e. that the used notation key was not correct and would be replaced by the notation key "NE" in the next submission. The ERT recommends that the Netherlands does not use the notation key "NE" and instead implements an appropriate technique to ensure time-series consistency (e.g. interpolation) in accordance with the guidance provided in the Guidebook.

111. During the review week the ERT noticed that in the NFR tables for 1991 and 1996 there are dips in the PAHs emission compared to the previous year (1990 and 1995 respectively). The Netherlands provided an explanation, i.e. that the reported values were not correct and would be replaced by the notation key "NE" in the next submission. The ERT

recommends that the Netherlands does not use the notation key “NE” and instead implements an appropriate technique to ensure time-series consistency (e.g. interpolation) in accordance with the guidance provided in the Guidebook.

112. During the review week the ERT noticed that in the NFR tables for 1991 there are dips in the NH_3 and NMVOC emissions compared to the previous year (which persist until 1994). The Netherlands provided an explanation, i.e. that the reported value was not correct and would be replaced by the notation key “NE” in the next submission. The ERT recommends that the Netherlands does not use the notation key “NE” and instead implements an appropriate technique to ensure time-series consistency (e.g. interpolation) in accordance with the guidance provided in the Guidebook.

113. During the review week the ERT noticed that in the NFR tables for 2002 there is a great dip in CO emissions compared to the previous year. The Netherlands provided an explanation, i.e. that the reported value was not correct and would be corrected in the next submission. The ERT recommends that the Netherlands does not use the notation key “NE” and instead implements an appropriate technique to ensure time-series consistency (e.g. interpolation) in accordance with the guidance provided in the Guidebook.

114. During the review week the ERT noticed that in the NFR tables for 2000 and 2010 there are dips in Pb emissions compared to the previous year (1999 and 2009 respectively). The Netherlands provided an explanation, i.e. that the reported values were not correct and would be replaced by the correct values in the next submission. The ERT recommends that the Netherlands makes this correction.

115. During the review week the ERT noticed that in the NFR tables the Netherlands had used the notation key “NO” for BC emissions, although there are PM emissions for this source category. The Netherlands provided an explanation for this issue and indicated that these emissions would be included in the next submission. The ERT recommends that the Netherlands implements this improvement.

2.D.3.a Domestic solvent use including fungicides – NH_3, NMVOC, Hg

116. During the review week the ERT noticed that for the period 1991-1994 the notation key “NO” (for NH_3 emissions) had been used by the Netherlands. The ERT recommends that the Netherlands provides an explanation for the use of “NO”.

117. During the review week the ERT noticed that this key source category is not very well described or documented and that Hg emissions are missing. The Netherlands provided information on all activities related to NMVOC emissions under 2.D.3.a. The ERT commends the Netherlands on that and recommends that the Netherlands includes this information in the next IIR to improve transparency and completeness. The ERT recommends that the Netherlands includes activity data and emission factors for all activities under the 2.D.3.a category. The ERT recommends that the Netherlands calculates the missing Hg emissions from Domestic solvent use (fluorescent tubes) by applying a Tier 1 or Tier 2 method as provided in the Guidebook and using the proposed emission factor for Hg (5.6 mg/person) and population data as basic activity statistics for the Tier 1 and Tier 2 method.

2.D.3.b Road paving with asphalt – NMVOC, TSP, PM_{10}, $PM_{2.5}$, BC

118. The Netherlands uses the notation key “IE” for NMVOC emissions and “NO” for other pollutants. The ERT recommends that the Netherlands uses the appropriate notation key for all applicable pollutants. The ERT also recommends that the Netherlands makes every effort to try and split emissions and include them where they belong in order to increase transparency and comparability.

2.D.3.c Asphalt roofing – NMVOC, CO, TSP, PM_{10}, $PM_{2.5}$, BC

119. The Netherlands uses the notation key “IE” for NMVOC emissions and “NO” for other applicable pollutants. The ERT recommends that the Netherlands uses the appropriate notation key for all applicable pollutants. The ERT also recommends that the Netherlands makes every effort to try and split emissions and include them where they belong in order to increase transparency and comparability.

AGRICULTURE

Review Scope:

Pollutants Reviewed		SO_2, NOx, NMVOC, NH_3, PM_{10} & $PM_{2.5}$		
Years		1990 – 2013 + (Protocol Years)		
NFR Code	**CRF_NFR Name**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
3B1a	Dairy cattle	X		
3B1b	Non-dairy cattle	X		
3B2	Sheep	X		
3B3	Swine	X		
3B4a	Buffalo		NO	
3B4d	Goats	X		
3B4e	Horses	X		
3B4f	Mules and asses	X		
3B4gi	Laying hens	X		
3B4gii	Broilers	X		
3B4giii	Turkeys	X		X
3B4giv	Other poultry	X		X
3B4h	Other animals (please specify in IIR)	X		
3Da1	Inorganic N fertilisers (includes also urea application)	X		
3Da2a	Animal manure applied to soils	X		
3Da2b	Sewage sludge applied to soils	X		
3Da2c	Other organic fertilisers applied to soils (including compost)	X		
3Da3	Urine and dung deposited by grazing animals	X		
3Da4	Crop residues applied to soils	X		
3Db	Indirect emissions from managed soils		X	
3Dc	Farm-level agricultural operations including storage, handling and transport of agricultural products	X		
3Dd	Off-farm storage, handling and transport of bulk agricultural products		X	
3De	Cultivated crops	X		
3Df	Use of pesticides	X		
3F	Field burning of agricultural residues		X	
3I	Agriculture other (please specify in the IIR)		X	
11A	Volcanoes		X	
11B	Forest fires		X	

General recommendations on cross-cutting issues

120. The ERT commends the Netherlands for its rigour in reporting emissions for the Agriculture sector. The ERT encourages the Netherlands to continue improving the inventory by providing the EFs used to calculate emissions (to increase transparency), to calculate and report NH_3 emissions from turkeys and other poultry separately and to prepare and report a formal improvement plan.

Transparency:

121. The Netherlands has provided a generally detailed and transparent emission inventory for the Agriculture sector with activity data, time series and trends all clearly presented with good method descriptions, references of data sources and assumptions in the NIR/IIR with limited use of IE. However, EFs are not presented in the IIR which makes it difficult for reviewers to fully assess underlying assumptions and the rationale for choices of data, methods and other inventory parameters. The external sources used for EFs are cited but the ERT recommends that the Netherlands includes a table of EFs to make the IIR more transparent.

Completeness:

122. All important sources are included in the inventory. The ERT considers the Agriculture sector to be largely complete and comprehensive with good levels of detail in the methodology descriptions. However, two minor sources - Turkeys (3B4giii) and Other poultry (3B4giv), currently Included Elsewhere (under 3B4gii Broilers) - could be reported separately. The minor source Mules and asses (3B4f) is reported and emission levels from Turkeys and Other poultry are likely to be approximately the same as emissions from Mules and asses.

Consistency including recalculation and time series:

123. The consistency of the time series reported by the Netherlands is considered to be good as activity data has been collected in the same way for many years. The current method for calculating emissions has been applied to the entire time series.

Comparability:

124. The Netherlands uses a published Tier 3 method to calculate NH_3 emissions, consistent with the approach recommended in The Guidebook. Since EFs are not presented in the IIR there is some lack of transparency. However, the derivation of the activity data is clearly described and fully supports the emission calculation methodology. It appears that under- or over-estimates of the emissions reported are not likely. The results are generally comparable with those of other Parties when the greater implementation of NH_3 abatement in the Netherlands is taken into account.

Accuracy and uncertainties:

125. The ERT commends the Netherlands for undertaking an uncertainty analysis for the Agriculture sector. It would enhance the value of the analysis if the Netherlands indicated in the IIR if the results have been used to help inform the improvement process.

Improvement:

126. The ERT notes that there is no improvement plan for the Agriculture sector. The ERT notes that during the compilation of inventory reports, activities are initiated for future improvements. The ERT suggests that the results of these activities be used to create a formal improvement plan that can be reported in the IIR.

Sector-specific Recommendations.

4B Manure management – NH_3

127. The ERT noted that the EFs used to calculate NH_3 emissions from 4B Manure Management were not presented. During the review the Netherlands responded that in the mass-flow approach EFs are expressed as a percentage of TAN and that EFs expressed in kg NH_3 could be calculated, but that they are year-specific. The Netherlands further explained that presenting all these EFs would not be feasible. However, they understood the need for further transparency. The ERT recommends that the Netherlands improves transparency by providing more information on EFs, e.g. by reporting the values for the most recent year or by reporting EFs as a percentage of TAN or both.

128. The ERT suggested that emissions from Turkeys and Other poultry be calculated and reported separately under 4B Manure Management. During the review, the Netherlands indicated that the calculation of emissions from Turkeys would again be discussed by the task force on agriculture and land use. As a result, the issue could still be reconsidered for next year's submission. The ERT recommends that the Netherlands improves completeness by estimating emissions for all livestock types for which data are available.

WASTE

Review Scope:

Pollutants Reviewed		All		
Years		1990 – 2013		
NFR Code	**CRF_NFR Name**	**Reviewed**	**Not Reviewed**	**Recommendation Provided**
5B1	Biological treatment of waste - Solid waste disposal on land	X		
5B2	Biological treatment of waste - Anaerobic digestion at biogas facilities	X		X
5C1a	Municipal waste incineration	X		X
5C1bi	Industrial waste incineration	X		X
5C1bii	Hazardous waste incineration	X		X
5C1biii	Clinical waste incineration	X		X
5C1biv	Sewage sludge incineration	X		X
5C1bv	Cremation	X		X
5C1bvi	Other waste incineration (please specify in the IIR)	X		
5C2	Open burning of waste	X		
5D1	Domestic wastewater handling	X		X
5D2	Industrial wastewater handling	X		X
5D3	Other wastewater handling	X		
5E	Other waste (please specify in IIR)	X		X

General recommendations on cross-cutting issues.

Transparency:

129. The Netherlands' emission calculations are transparent and understandable. For sub-sectors where notation keys are used, the ERT encourages the Party to provide a short explanation in the next IIR about the chosen notation keys.

Accuracy and uncertainties:

130. There are no source-specific QA/QC procedures. The categories in this sector are covered by the general QA/QC procedures. The ERT encourages the Netherlands to develop uncertainty estimates for the Waste sector.

Improvement:

131. Emissions from the application of sewage sludge and compost are included in inventory. The ERT commends the Netherlands for including these sources in the inventory.

Sector-specific Recommendations.

5B1 - Biological treatment of waste – Composting - All Pollutants

132. The Netherlands includes emissions from composting in the inventory. However, the ERT notes that data on composted amounts in households are not provided. The ERT recommends that the Netherlands includes these data in the next submission.

5B2 - Biological treatment of waste - Anaerobic digestion at biogas facilities - All Pollutants

133. The Netherlands uses the notation key “NO”. Since biogas production is occurring in the Netherlands, the ERT believes that the notation key is incorrect. The ERT recommends that the Netherlands estimates emissions or revises the use of the notation key.

5C1a - Municipal waste incineration, 5C1bi - Industrial waste incineration, 5C1bii - Hazardous waste incineration, 5C1biii - Clinical waste incineration & 5C1biv - Sewage sludge incineration – All pollutants

134. The Netherlands uses the notation key “NO”. Since several types of waste incineration occur in the Netherlands, the ERT recommends that the Netherlands revises the use of the notation key.

5C1bv – Cremation – BC

135. The Netherlands reports a value of “0” for BC. The ERT recommends that the Netherlands uses an appropriate notation key or an emission value.

5D1 - Domestic wastewater handling – NMVOC and NH_3

136. The Netherlands uses the notation key “NO”. In the IIR it is explained that 80 % of the emitted gases are collected and used for energy production. The ERT recommends that the Netherlands reports the proportion of the 20 % of gases that consists of NMVOC in the next submissions.

5D2 - Industrial wastewater handling – NMVOC

137. The Netherlands uses the notation key “NO”. The ERT encourages the Netherlands to estimate the amount of sludge gases that is not collected for energy recovery from industrial waste waters and to report it in the next submissions.

5E -Other waste – SO_x, NMVOC, TSP, CO

138. The Netherlands reports emissions from fridge dismantling. The ERT commends the Netherlands initiative for calculating these emissions. Information about the EF chosen (including a reference) is not available. The ERT recommends that the Netherlands includes this information in the next submission.

LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

1. Response to preliminary question raised prior to the review
2. Response to questions raised during the review
3. The Netherlands Stage 2 S&A report 2015
4. The Netherlands Stage 1 report 2015
5. The Netherlands IIR 2015