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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
AZERBAIJAN**

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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 SO₂, NO_x, NMVOC, NH₃, plus PM₁₀ & 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 Azerbaijan 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. The ERT commends Azerbaijan for providing an IIR and for responding to questions raised by the ERT during the review of the inventory, both of which enabled the ERT to provide recommendations for the further development of the inventory.
7. The ERT found the emissions inventory and the IIR to be generally of good quality. Recommendations to further improve the inventory are provided below.

INVENTORY SUBMISSION

8. Azerbaijan submitted the inventory under the UNECE CLRTAP on 12th February 2015, before the deadline of 15th February. The inventory was submitted in NFR 2014 format and covered the Protocol base years and a full time series for 1990 - 2013 (the latest year) for NO_x, NMVOC, NH₃, PM₁₀, PM_{2.5}, TSP and Hg, and for the other pollutants a full time series for the years since 1995. The submission included data on LPS. Azerbaijan also submitted an IIR on 13th March 2015, before the deadline of 15th March.
9. The submission did not include data on projections or gridded emissions data. To a question raised about this issue Azerbaijan replied that they were planning to include gridded data in their future submissions. Regarding the reporting of projections, Azerbaijan indicated a need for support from TFEIP to prepare emissions projection data. The ERT welcomes this development.
10. The ERT concludes that the inventory submitted by Azerbaijan is generally of good quality and is in general well documented in the Informative Inventory Report (IIR).

KEY CATEGORIES

11. Azerbaijan has compiled and presented, in its IIR, a level Key Source Category Analysis for the following pollutants: NO_x, NMVOC, SO_x and NH₃ and a trend analysis for NO_x. The results of the KCA provided by Azerbaijan and the one prepared by the CEIP are consistent; however, the presentation form of the results in the IIR of Azerbaijan is not comparable with the presentation of the results provided by the CEIP. The ERT recommends that Azerbaijan completes the KCA for the remaining pollutants and reports the results in the IIR in a comparable format.

QUALITY

Transparency

12. The ERT recognises the level of effort undertaken by Azerbaijan in providing an inventory with a level of detail that made it possible to undertake a detailed review. The Party's IIR also provides information supporting the review of the inventory.
13. Azerbaijan reports many of the sources as NE but also provides explanations for the not estimated values in the IIR in table 1.7-1. Some sources reported as included elsewhere (IE) are also explained in the IIR table 1.7-2. The ERT commends Azerbaijan for providing information on the notation keys in the IIR; however, it also recommends that Azerbaijan

checks the use and documentation of notation keys in the Energy sector (paragraphs 37, 38 and 39), as well as in the Industrial Processes (paragraph 65) and the Waste sectors (paragraph 90).

14. The ERT notes that some chapters (e.g. regarding uncertainties, recalculations, projections as well as some of the sub-sector chapters) are missing from the IIR which thus does not fully follow the annotated outline of an IIR as provided in the EMEP Reporting Guidelines². The ERT encourages Azerbaijan completes the IIR by including all chapters as given in the annotated outline of IIRs, particularly sections on recalculations and missing sub-sectors.

15. The ERT found the methodologies to calculate emissions not to be fully transparent, and recommends that Azerbaijan improves the documentation in the IIR, especially regarding EFs and AD in the Transport, Industrial Processes, Solvent use, Agriculture and Waste sectors (paragraphs 45, 49, 60, 62, 63, 66, 76, 78, 79, 80 and 89).

16. The ERT notes that there is not enough supporting information in the IIR to understand the generation of emissions, and recommends that Azerbaijan completes the information in the IIR as explained in the Industrial Processes (paragraphs 51 and 63) and in the Waste sectors (paragraphs 89 and 95),

17. The IIR lacks background information on emission trends and the ERT recommends that the Party provides information in the IIR to explain the driving factors behind the emission trends in all sectors

18. The ERT also recommends that Azerbaijan provides a more detailed documentation of the recalculations including justifications, and their impacts on the emission levels in the IIR.

Completeness

19. The ERT acknowledges the effort to which Azerbaijan has gone to provide estimates of emissions for all sub-sectors and all pollutants reviewed. In the IIR, Azerbaijan has provided an assessment of the completeness of the inventory.

20. The ERT concludes that Azerbaijan's inventory is complete regarding the sources and years for NO_x, NMVOC, NH₃, PM₁₀, PM_{2.5}, TSP and Hg. The ERT recommends that Azerbaijan completes the inventories for the other pollutants for the time series years 1990-1995.

21. The ERT has identified some missing and possibly missing sources:

- (a) energy: 1A1b, 1A1c, 1A3ei, 1B2c (paragraphs 35, 36, 37 and 41);
- (b) solvents: the years 1990-2013 for 2.D.3.b Road paving with asphalt, 2.D.3.c Asphalt roofing, 2.D.3.d Coating applications, 2.D.3.e Degreasing, 2.D.3.f Dry cleaning, 2.D.3.h Printing, and 2.D.3.i Other solvent use; the years 1990-2005 for 2.D.3.g Chemical products, and the years 1990-2004 for 2.G Other product use (tobacco). (paragraph 67);
- (c) agriculture: NH₃ and PM for non-dairy cattle 3B1b, broilers 3B4gii, laying hens (3B4gi) and turkeys (3B4giii) (paragraph 88);

² ECE/EB.AIR.125, Annex II: Recommended Structure for Informative Inventory Report (IIR)

- (d) waste: emissions are reported only for 2009; not reported biological treatment of waste (5A and 5B sectors), municipal waste incineration 5C1a, sewage sludge incineration 5C1biv, cremation 5C1bv. Possibly missing; open burning of waste, other waste incineration 5C1bvi; domestic, industrial and other wastewater handling or other waste (paragraphs 92, 93, 95, 97 and 98).

22. The ERT recommends that Azerbaijan states whether emissions from the sources listed in para 20 occur, and documents them in the IIR. For activities that have existed since 1990, the ERT recommends that Azerbaijan collects data to estimate missing emissions and that it reports the emissions in the correct NFR 2014 categories for the whole time series. The ERT acknowledges the difficulties in obtaining data back in time and commends Azerbaijan for their work so far. Nevertheless, in cases where it is not possible to find activity data, the ERT recommends that Azerbaijan provides qualitative or quantitative values in the IIR, and reports extrapolated emission values where possible, to maintain the scientific standard of the inventory, or that it justifies the use of the notation key NE in the IIR.

Consistency, including recalculations and time series

23. The ERT notes that there are dips and jumps in the time series and that no information is provided in the IIR to enable an understanding of the drivers behind the fluctuating trends or to conclude whether the fluctuations are due to methodological issues or changes in the actual emission levels. The ERT recommends that Azerbaijan provides explanations for the drivers behind the emission trends in the IIR.

24. In its IIR Azerbaijan states that it plans to recalculate previous years and increase the number of covered estimated categories. The ERT welcomes this; however, it also recommends that Azerbaijan provides a rationale for the recalculations as well as information on the impacts of the recalculations on emission levels in the time series in its future IIR submissions.

Comparability

25. The ERT notes that the inventory of Azerbaijan is generally comparable with those of other reporting parties. The allocation of source categories mainly follows that of the EMEP/UNECE Reporting Guidelines. The ERT recommends that Azerbaijan moves on to higher tier methods to better reflect the actual emission levels, and that it corrects some misallocated emission values (paragraphs 64 and 79).

Accuracy and uncertainties

26. The ERT notes that Azerbaijan has calculated the inventory mainly using Tier 1 methodologies from the EMEP/EEA Guidebook 2013. As the default methodologies may under- or overestimate the national emission levels in Azerbaijan, the ERT recommends that the Party move on to higher tier methodologies, in order to increase the accuracy of the inventory. Azerbaijan has not carried out an uncertainty analysis. The ERT encourages the Party to estimate uncertainties and use the results to prioritise improvements in the inventory, and to report the results of the uncertainty analysis in the IIR.

Verification and quality assurance/quality control approaches

27. Azerbaijan describes the core elements of QA/QC work in the IIR. However, no information is provided on QA/QC checks at source category level, nor information on any verification procedures. The ERT commends the general QA/QC work and recommends that

Azerbaijan includes more details of QA/QC practices and the results of the work on sector level in the future IIRs.

FOLLOW-UP TO PREVIOUS REVIEWS

28. Azerbaijan has not provided responses to the Stage 1 and 2 reviews. No previous Stage 3 review report is available.

AREAS FOR IMPROVEMENTS IDENTIFIED BY AZERBAIJAN

29. In the IIR Azerbaijan provides information on plans to

- (a) increase the number of source categories included in the inventory,
- (b) collect data directly from the companies and to use data from State Statistical Committee,
- (c) recalculate previous years' data
- (d) improve and develop national methodologies for some categories

30. The ERT welcomes the improvement plans indicated by Azerbaijan and encourages the Party to complete the improvement work. The ERT also recommends that Azerbaijan provides sector-specific improvement plans in the IIR.

PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

CROSS-CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

31. The ERT recommends that Azerbaijan:
- (a) completes the KCA for the remaining pollutants and reports the results in the IIR in a comparable format.
 - (b) checks the use and documentation of notation keys and the allocation of emissions
 - (c) improves the documentation of methodologies used to estimate emissions, especially regarding EFs and AD and background information
 - (d) provides a rationale for the recalculations and information on the impacts on emission levels in the time series in the IIR
 - (e) completes the inventory by estimating and reporting missing emission values and that it specifies whether sources exist or not, and provides reasons for cases where emissions are not estimated in the IIR
 - (f) provides explanations for the drivers behind the emission trends in the IIR.
 - (g) moves on to higher tier methods, at least for key sources
 - (h) carries out uncertainty analysis and reports the results in the IIR, and that it uses the results of the analysis to prioritise improvements in the inventory
 - (i) includes more details of sector specific QA/QC practices and the results of the work in the IIRs.

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		
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		
1A2c	Chemicals	X		
1A2d	Pulp, Paper and Print	X		
1A2e	Food processing, beverages and tobacco	X		
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	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		
1A4bi	Residential: Stationary	X		
1A4ci	Agriculture/Forestry/Fishing: Stationary	X		
1A5a	Other stationary (including military)	X		X
1B1a	Fugitive emissions from solid fuels: Coal mining and handling	X		X
1B1b	Fugitive emissions from solid fuels: Solid fuel transformation	X		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		
1B2b	Fugitive emissions from natural gas (exploration, production, processing, transmission, storage, distribution and other)	X		
1B2c	Venting and flaring (oil, gas, combined oil and gas)	X		X
1B2d	Other fugitive emissions from energy production	X		

General recommendations on cross-cutting issues.

Transparency:

32. The IIR contains all the basic information required, including a short description of the developments of the fuel mix and the economic situation. The data sources of the emission factors are explained. The ERT encourages Azerbaijan to include some basic information about the data source of the fuel consumption data in the next submission.

Completeness:

33. A major part of the stationary combustion inventory from Azerbaijan is complete. Important fuel consumption data are also reported in the NFR tables. The party explains in the IIR that they cannot provide time series for all pollutants from 1990. The trend for some pollutants can also be explained by the unavailability of data.

34. In several cases the notation key NE is used (see para 35, 36, 41); in some cases relevant emissions can be expected. In one case NA is used (see para 37) although emissions are expected.

Sub-sector Specific Recommendations.

1.A.1.b Petroleum refining – All pollutants

35. Emissions from refineries are not estimated due to a lack of statistical data. Usually the national statistics (national energy balance) provides data on the refineries' own consumption. Several countries compile specific statistics of petroleum products. In some cases, additional information is available from the petroleum industry or the industrial association. The ERT recommends that Azerbaijan collects statistical data on fuel consumption in refineries and estimates emissions in the next submission.

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

36. Emissions from other energy industries are not reported because of a lack of statistical data. There are no coking plants and there is no other coal industry in Azerbaijan. But emissions from the consumption of fuels in connection with oil and gas exploration/production are considered to be relevant. The ERT recommends that Azerbaijan collects statistical data on the fuel consumption from oil and gas exploration/production and estimates emissions in the next submission.

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

37. During the review the Party stated that emissions from pipeline transport were reported as NA since no default emission factors were available. Nevertheless, it can be assumed that there are compressor stations in Azerbaijan for the transportation of natural gas and oil. The ERT encourages the Party to collect data on compressor stations and their own consumption. The ERT notes that default emission factors can be used from source category 1.A.1.a since specific default emission factors are not available.

1.A.5.a Other stationary (including military) – All pollutants

38. Emissions from stationary military plants are reported as NA. It is very likely that some military plants exist in Azerbaijan. The ERT recommends that Azerbaijan explains in

the IIR the reasons why military plants do not exist in Azerbaijan or whether their fuel consumption is already included in another part of the inventory.

1.B.1.a Coal mining and handling & 1.B.1.b Solid fuel transformation – All pollutants

39. Azerbaijan describes in the IIR that coal was important in Azerbaijan until 1990, but that coal imports ended with the fall of the Soviet Union. The understanding of the ERT is that coal is not used anymore. Own coal resources seem to be not available. If this information is correct all notation keys for solid fuel consumption in the NFR tables can be changed from NE to NO for the years after the coal imports stopped. Furthermore, the notation keys in source category 1.B.1.a and 1.B.1.b can also be changed from NE to NO.

1.B.2.a.iv Fugitive emissions oil: Refining / storage – All pollutants

40. The share of fugitive emissions is very high in Azerbaijan, compared to other countries. In Azerbaijan there is significant oil and gas exploration/production and coal is no longer used. Source category 1.B.2.a.iv contains emissions from the storage and flaring processes of refineries. According to the NFR tables, the amount of “oil refined” has been used as activity data (6.5713 Mt in 2013). But a calculation of the IEFs shows that in reality “crude oil production” has been used for the calculation (43.4574 Mt in 2013). The result of the division by the amount of crude oil production is the default value for each pollutant. The ERT recommends changing the calculation by using “oil refined” as activity data in accordance with the Guidebook.

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

41. The Party explains in the IIR that emissions from venting and flaring are not reported because of the lack of statistical data. Since oil and gas production is a very important activity in Azerbaijan, the ERT considers that the emissions from venting and flaring could be significant. Therefore, the ERT recommends that Azerbaijan collects activity data and estimates emissions for the next submission.

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		
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		
1A4bii	Residential: Household and gardening (mobile)	X		
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	X		
1A4ciii	Agriculture/Forestry/Fishing: National fishing	X		
1A5b	Other, Mobile (including military, land based and recreational boats)	X		
1A3di(i)	International maritime navigation	X		
1A3	Transport (fuel used)	X		

General recommendations on cross-cutting issues.

Transparency:

42. Azerbaijan has provided an IIR which describes the few methodologies that are used; however, the ERT notes that all sectors and especially the Transport sector use a Tier 1 methodology. The ERT therefore strongly encourages Azerbaijan to improve the inventory by using a higher tier methodology with more accurate activity data (e.g. fleet composition, emission standard, traffic etc.) and emission factors.

Completeness:

43. The ERT does not consider the Transport sector to be complete. The ERT recommends that Azerbaijan further improves its inventory by estimating emissions from the sources currently not included (e.g. all the transport sub-sectors which are included in Table 1.7-1 in the IIR).

Consistency including recalculation and time series:

44. The ERT notes that the time series are not complete (e.g. the road transport sector time series begin in 1994). The ERT encourages Azerbaijan to improve the inventory in order to provide a consistent time series.

Comparability:

45. The ERT notes that no activity data (AD) are provided in the IIR and that explanations for AD trends are missing. During the review the ERT asked the Party if such information was planned. The Party provided no answer during the review. The ERT encourages Azerbaijan to complete the IIR with AD and associated explanations for the trends in the next submission.

Accuracy and uncertainties:

46. The ERT encourages Azerbaijan to implement sector-specific QA/QC procedures and an uncertainties assessment in order to prioritise further improvements.

Improvement:

47. The ERT notes the information provided on improvements. The ERT encourages Azerbaijan to continue to provide detailed information on included and planned improvements.

Sub-sector Specific Recommendations.

1A3a Aviation, 1A3b Road transportation, 1A3c Railways & 1A3d Navigation- All pollutants

48. The ERT notes that all emissions are calculated by using the Tier 1 methodology. With this simple methodology, road transport emissions of the main pollutants seem to be key categories (with a possible over-estimation). This issue was raised with the Party during the review. The ERT recommends that Azerbaijan improves the inventory by using a higher tier methodology for sectors which are key categories.

1A3a Aviation, 1A3b Road transportation, 1A3c Railways & 1A3d Navigation – Activity data

49. The ERT notes that activity data are only provided in the NFR tables and not in the IIR. The ERT encourages Azerbaijan to improve the inventory by providing activity data both in the IIR and the NFR tables with associated explanations for trends to improve transparency and comparability.

1A3b Road transportation – All pollutants

50. The ERT notes that Azerbaijan has mentioned a plan to change to a national methodology in future submissions. The ERT recommends that Azerbaijan provides detailed information on this methodology (e.g. activity data, emission factors, sources etc.) in the IIR.

INDUSTRIAL PROCESSES

Review Scope

Pollutants Reviewed		All		
Years		1990 – 2013		
NFRCode	CRF_NFRName	Reviewed	Not Reviewed	Recommendation Provided
2A1	Cement production	X		X
2A2	Lime production	X		X
2A3	Glass production	X		
2A5a	Quarrying and mining of minerals other than coal	X		
2A5b	Construction and demolition	X		
2A5c	Storage, handling and transport of mineral products	X		
2A6	Other mineral products (please specify in the IIR)	X		
2B1	Ammonia production	X		
2B2	Nitric acid production	X		
2B3	Adipic acid production	X		
2B5	Carbide production	X		
2B6	Titanium dioxide production	X		X
2B7	Soda ash production	X		
2B10a	Chemical industry: Other (please specify in the IIR)	X		
2B10b	Storage, handling and transport of chemical products (please specify in the IIR)	X		X
2C1	Iron and steel production	X		X
2C2	Ferroalloys production	X		
2C3	Aluminium production	X		
2C4	Magnesium production	X		X
2C5	Lead production	X		
2C6	Zinc production	X		
2C7a	Copper production	X		
2C7b	Nickel production	X		
2C7c	Other metal production (please specify in the IIR)	X		
2C7d	Storage, handling and transport of metal products (please specify in the IIR)	X		
2H1	Pulp and paper industry	X		X
2H2	Food and beverages industry	X		X
2H3	Other industrial processes (please specify in the IIR)	X		
2I	Wood processing	X		X
2J	Production of POPs	X		
2K	Consumption of POPs and heavy metals (e.g. electrical and scientific equipment)	X		
2L	Other production, consumption, storage, transportation or handling of bulk products (please specify in the IIR)	X		

General recommendations on cross-cutting issues

Transparency:

51. The ERT commends the efforts made by Azerbaijan to report a transparent inventory. However, improvements should still be made to ensure the transparency of the inventory and to facilitate the review. Therefore, the ERT recommends that Azerbaijan provides, in future submissions, the following information for each NFR category:

- (a) The activity data time series;
- (b) Information on the source of the activity data;
- (c) An explanation of the methods, and if appropriate, the emission factor(s) used;
- (d) A qualitative explanation of the trends.

Completeness:

52. The ERT notes that Azerbaijan includes in the IIR an assessment of the completeness of the whole inventory, detailing the category, pollutants, and the reason for not estimating the emissions. The ERT commends Azerbaijan for including this assessment in the IIR.

53. Azerbaijan has provided estimates of emissions for seven categories in the Industrial Processes sector. The estimates have been provided for the time series years 1995 – 2013 for the categories 2.A.1, 2.A.2 and 2.C.1; and for the time series years 2005-2013 for the categories 2.G, 2.H.1, 2.H.2 and 2.I. The ERT commends Azerbaijan for this effort and encourages the country to complete the time series.

Consistency including recalculation and time series:

54. The ERTs considers that the time series provided by Azerbaijan are generally consistent, with exceptions as outlined above in paragraph 53.

55. The ERT notes that 2015 is the first submission year for Azerbaijan and that the Party has not recalculated activity data or emissions. In any case, the ERT encourages Azerbaijan to include information on the recalculations made at category level in future submissions.

Comparability:

56. In section 1.3 of the IIR "Inventory preparation process", Azerbaijan explains that the emission factors used are extracted from the EMEP/EEA Guidebook of 2013. For the activities where the activity data is provided (2A2, 2C1, 2G, 2H1 and 2H2) the ERT confirms that all emissions are calculated using the Tier 1 emission factors provided by EMEP/EEA 2013.

Accuracy and uncertainties:

57. The ERT notes that, even though Azerbaijan has an appropriate Key Category Analysis in place, the Party has not yet developed a quantitative uncertainty assessment. The ERT encourages Azerbaijan to develop this assessment for future editions of the inventory.

58. In section 1.6, Azerbaijan describes the general QA/QC procedures applied to the inventory. The ERT commends Azerbaijan for implementing a QA/QC procedure for the

inventory and encourages the Party to keep developing these processes and incorporate specific checks for the Industrial Processes sector.

Improvement:

59. The ERT notes that Azerbaijan provides information on its planned improvements in section 7 of the IIR. The ERT commends Azerbaijan for this information and encourages the Party to provide a sector-specific improvement plan in the next submission.

Sector-specific Recommendations.

2.A.1 Cement production – TSP, PM₁₀, PM_{2.5}

60. Cement production data are not provided, which reduces transparency. The ERT recommends that Azerbaijan provides the activity data for this category as well as a qualitative assessment of the emission trend.

2.A.2 Lime production – TSP, PM₁₀, PM_{2.5}

61. The ERT encourages Azerbaijan to provide in the IIR an explanation on the trend for these emissions, especially the high values of years 2006, 2007, 2012 and 2013.

2.C.1 Iron and steel production – All pollutants

62. The emissions reported in this category are very low for the years from 1995 to 1999, then the country reports NE for the emissions in 2000. Since then, the reported emissions have been increasing. The ERT encourages Azerbaijan to confirm the production of steel for the years 1995 - 1999 and also to obtain/estimate a production value for the year 2000. Additionally, the ERT encourages Azerbaijan to provide in the IIR an explanation on the trend for the emissions of this category. In response to the draft review report, Azerbaijan explained that production was low during the period 1995-1999 and that production was zero in 2000. The ERT acknowledges the explanations provided and recommends that Azerbaijan reports iron and steel production as not occurring (NO) in 2000.

2.G - Other product use – tobacco - NMVOC

63. The ERT encourages Azerbaijan to provide details on the emission factor used for this category. Additionally, the ERT encourages Azerbaijan to use the emission factors provided in Table 3.14 of chapter 2.D.3.i, 2.G Other solvent and other product use, of the EMEP/EEA 2013 Guidebook to enhance completeness for the emissions from this category.

2.H.1 & 2.H.2 & 2I - Pulp and paper and food and beverages industry, wood processing

64. The ERT notes that the IIR includes an aggregated explanation for categories from 2.D to 2.L. The ERT recommends separating the solvents categories (2.D) from the categories 2.H and 2.I.

2.B.6 Titanium dioxide production, 2.B.10.b Storage, handling and transport of chemical products & 2.C.4 Magnesium production – All pollutants

65. The ERT notes that all the pollutants in these categories are labelled as NA. The ERT recommends that Azerbaijan ascertains if these activities occur in the country. If they do not occur, the notation key should be changed to NO. If the activity does take place in the country and emissions occur, the notation key to be used should be NE.

SOLVENTS

Review Scope

Pollutants Reviewed		All		
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		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:

66. The ERT considers Azerbaijan's methodology and emission factors in the IIR to be at the basic level for the Solvent sector. The ERT encourages Azerbaijan to include more detail in the IIR including trends for all used activity data and a list of implied emission factors.

Completeness:

67. The ERT considers the Solvent sector to be incomplete. Azerbaijan uses the notation key "NE" for the period 1990 – 2013 for the source categories 2.D.3.b Road paving with asphalt, 2.D.3.c Asphalt roofing, 2.D.3.d Coating applications, 2.D.3.e Degreasing, 2.D.3.f Dry cleaning, 2.D.3.h Printing, and 2.D.3.i Other solvent use, as well as for the period 1990 – 2005 for 2.D.3.g Chemical products, and for the period 1990 – 2004 for the 2.G Other product use (tobacco). The ERT recommends that Azerbaijan completes the time series for the sectors 2.D.3.g Chemical products and 2.G Other product use (tobacco). Furthermore, the ERT also recommends that Azerbaijan adopts a plan for collecting missing activity data on activities in the Solvent sector and calculates emissions by using the methodology from the Guidebook.

Consistency including recalculation and time series:

68. During the review week the ERT noted that there were dips and jumps in the NMVOC emissions in the source category 2.D.3.g Chemical products, and 2.G Other product use (tobacco). The ERT recommends that Azerbaijan explains major fluctuations of these emissions in the IIR.

69. Azerbaijan has adopted a quality management system in order to ensure the completeness, accuracy and transparency of the submitted data. Azerbaijan has also carried out checks with experts not directly involved in the IIR preparation. The ERT commends Azerbaijan for that and encourages Azerbaijan to continue with this good practice and also to implement Solvent sector-specific OA/QC procedures.

Accuracy and uncertainties:

70. The ERT encourages Azerbaijan to undertake 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.

Improvement:

71. The ERT notes that Azerbaijan has a plan to improve completeness in coming years, which will include activity data collections directly from the companies and also from the State Statistical Committee. The ERT commends Azerbaijan for that and recommends that Azerbaijan continues with this plan and reports on its progress in the next submission.

72. The ERT notes that Azerbaijan has a plan to use country-specific methodologies in some categories. The ERT commends Azerbaijan for that and recommends that Azerbaijan continue with this plan and reports on its progress in the next submission.

Sector-specific Recommendations.

2.D Non-energy products from fuels and solvent use – NMVOC

73. During the review week the ERT noted that Azerbaijan had not provided an explanation regarding increasing NMVOC trends. The ERT recommends that Azerbaijan includes and explains the reasons for jumps or dips in the IIR to improve the transparency of IIR.

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

74. During the review week the ERT noted that Azerbaijan had not included activity data in the IIR or in the NFRs tables. The ERT recommends that Azerbaijan includes missing activity data and improves the transparency and completeness of the IIR and the NFR tables.

75. This source category is a key source of NMVOC and Hg emissions. The ERT advises Azerbaijan to apply a higher tier (Tier 2) methodology in order to avoid an underestimation or overestimation of emissions.

2.D.3.g Chemical products - NMVOC

76. The ERT notes that there are no activity data reported in the NFR tables and in the IIR for this source category. The ERT recommends that Azerbaijan includes missing activity data and improves the transparency and completeness of the IIR and the NFR tables.

2.G Other product use – all

77. During the review the ERT highlighted the absence of pollutant emission estimates for emissions from tobacco combustion other than NMVOC. Azerbaijan uses a Tier 1 methodology for estimating emissions, which requires knowledge about the total mass of tobacco used. For applying the Tier 2 methodology the same activity data are needed. The ERT recommends that Azerbaijan applies the Tier 2 methodology and calculates all emissions from this source category in accordance with the Guidebook to improve completeness of the inventory.

AGRICULTURE

Review Scope:

Pollutants Reviewed		All		
Years		2009 – 2013		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
3B1a	Dairy cattle	X		X
3B1b	Non-dairy cattle	X		X
3B2	Sheep	X		X
3B3	Swine	X		X
3B4a	Buffalo	X		X
3B4d	Goats	X		X
3B4e	Horses	X		X
3B4f	Mules and asses	X		X
3B4gi	Laying hens	X		X
3B4gii	Broilers	X		X
3B4giii	Turkeys	X		X
3B4giv	Other poultry	X		X
3B4h	Other animals (please specify in IIR)	X		X
3Da1	Inorganic N fertilisers (includes also urea application)	X		
3Da2a	Animal manure applied to soils	X		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		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

Transparency:

78. In addition to calculating emissions of NH₃ and PM, Azerbaijan has also calculated and reported emissions of NO_x and NMVOCs. However, only the total emissions are reported for each pollutant in the IIR. No information is given on the method used (Tier 1, Tier 2), the EFs used, livestock numbers, amounts and types of N fertiliser or any other activity data. This means that reviewers cannot make any assessments of the underlying assumptions and the rationale for the choices of data, methods and other inventory parameters. Trends are only reported for 2009 to 2013 with no explanation. Emissions from laying hens (3B4gi) and turkeys (3B4giii) are reported together with other poultry. The key sources of the emissions have not been reported.

79. The major sources of livestock manure applied to soils (3Da2a) and of urine and dung deposited by grazing animals (3Da3) are not reported under 3D. It is possible that Azerbaijan was not aware of this new reporting requirement and that these emissions are reported under 3B. The ERT recommends that Azerbaijan specifies where 3Da2a and 3Da3 are calculated and reported.

80. The ERT recommends that Azerbaijan reports livestock numbers and EFs for each class of livestock reported together with a summary of the method used to calculate emissions and the reason why that method was chosen. It will also be helpful to include references for the sources used for the data and the methodology.

Completeness:

81. The ERT considers the Agriculture sector to be almost complete for the years reported. Azerbaijan has not estimated emissions from non-dairy cattle (3B1b) or broilers (3B4gii), two sources that are likely to be significant. The ERT recommends that Azerbaijan prepares a plan to obtain activity data and EFs for these sources to be able to report them.

Consistency including recalculation and time series:

82. The IIR for Azerbaijan does not indicate if the inventory has been recalculated for the years 2009-2013. The ERT encourages Azerbaijan to provide more detailed explanations of any recalculations, including a rationale, the impact on the sector and the implication for trends in the Agriculture sector in its IIR.

Comparability:

83. On page 6 of the IIR Azerbaijan states that the emission calculations were carried out for all sectors using the EFs in the 2013 Guidebook. Due to the lack of methodological description in the IIR, the ERT could not assess whether there are any over- or under-estimates.

Accuracy and uncertainties:

84. No uncertainty analysis is provided in the IIR. The ERT recommends that Azerbaijan undertakes an uncertainty analysis for the Agriculture sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

85. Azerbaijan carries out QA/QC checks, including a basic review performed by experts who are not involved in inventory preparation (section 1.6. of the IIR). The IIR does not indicate if there has ever been an extensive review of the key categories or if there is any periodic internal review of inventory preparation. No sector-specific information is provided. The ERT recommends that Azerbaijan carries out a Key Category Analysis and encourages Azerbaijan to implement sector-specific QA/QC procedures for agriculture and to provide more details on the QA/QC procedures.

Improvement:

86. The ERT notes Azerbaijan's intention to improve the inventory. The ERT encourages Azerbaijan to incorporate the recommendations below into a more detailed improvement plan for the Agriculture sector.

Sector-specific Recommendations.**4B Manure management – NH₃, PM, NO_x and NMVOC**

87. The ERT recommends that Azerbaijan reports livestock numbers and EFs for each class of livestock reported together with a summary of the method used to calculate emissions and the reason why that method was chosen. It will also be helpful to include references for the sources used for the data and the methodology.

4B Manure management – NH₃ and PM

88. The ERT recommends that Azerbaijan calculates NH₃ and PM emissions from the sources non-dairy cattle (3B1b), broilers (3B4gii), laying hens (3B4gi) and turkeys (3B4giii).

WASTE

Review Scope:

Pollutants Reviewed		All		
Years		2009 – 2013		
NFR Code	CRF_NFR Name	Reviewed	Not Reviewed	Recommendation Provided
5B1	Biological treatment of waste - Solid waste disposal on land	X		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		X
5C2	Open burning of waste	X		X
5D1	Domestic wastewater handling	X		X
5D2	Industrial wastewater handling	X		X
5D3	Other wastewater handling	X		X
5E	Other waste (please specify in IIR)	X		

General recommendations on cross-cutting issues.

Transparency:

89. The ERT considers that the emission calculations are not transparent due to a lack of information on activity data and emission factors. The ERT recommends that Azerbaijan provides more detailed explanations for activity data and emission factors in the next submission. For categories in which notation keys are used, the ERT recommends that Azerbaijan provides an explanation in the next IIR about the choice of notation keys.

Completeness:

90. The ERT considers that the inventory is not complete. Emission data are available only for the years from 2009 onwards and emissions have only been estimated for three sub-sectors. The ERT recommends that Azerbaijan completes the time series and estimates emissions for other relevant categories within the Waste sector.

Accuracy and uncertainties:

91. Azerbaijan does not estimate uncertainties. The ERT encourages Azerbaijan to estimate uncertainties in accordance with the Reporting Guidelines.

Sector-specific Recommendations.

5.A Solid waste disposal on land – NMVOC, PM

92. Azerbaijan does not report emissions for this category. If data about waste disposal is not available, then UNFCCC 2006 Guidelines could be used. The ERT recommends that Azerbaijan uses available data about solid waste disposal to estimate emissions.

5.B.1 Composting - All Pollutants

93. Azerbaijan does not report emissions for this category. The ERT recommends that Azerbaijan starts to estimate composted amounts and associated emissions and reports them in the next submission.

5.B.2 Anaerobic digestion at biogas facilities

94. Azerbaijan does not report emissions for this category. The ERT recommends that Azerbaijan describes shortly in the next IIR whether this activity occurs.

5.C.1.a - Municipal waste incineration – All pollutants

95. Azerbaijan does not report emissions for this category. Azerbaijan reports NE in this category. The ERT encourages Azerbaijan to provide a short explanation about whether municipal waste incineration occurs in the next IIR and if so, to provide information on the number of incinerators and the amount of waste incinerated.

5.C.1.b.i Industrial waste incineration, 5.C.1.b.ii Hazardous waste incineration & 5.C.1.b.iii Clinical waste incineration – All pollutants

96. Azerbaijan has reported emissions since 2009. The ERT recommends that Azerbaijan provides activity data and emission factors in the IIR. For better understanding, the ERT also recommends that Azerbaijan provides a description of the activity data, estimations and data sources.

5.C.1.b.iv Sewage sludge incineration, 5.C.1.b.v Cremation & 5.C.2 Open burning of waste – All pollutants

97. Azerbaijan does not report emissions for these categories. The ERT encourages Azerbaijan to provide a short explanation about these categories including an indication as to whether they are considered to occur in the next submission.

5.D.1 Domestic wastewater handling & 5.D.2 Industrial wastewater handling – All pollutants

98. Azerbaijan does not report emissions for these categories. In the Second National Communication to the UNFCCC, Azerbaijan reports an amount of industrial wastewater. According to this information, it is possible to estimate NMVOC emissions. The ERT recommends that Azerbaijan estimates emissions from industrial wastewater using the activity data already available. Additionally, the ERT recommends that Azerbaijan collects data on domestic wastewater and estimates emissions.

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. Azerbaijan Stage 2 S&A report 2015
4. Azerbaijan Stage 1 report 2015
5. Azerbaijan IIR 2015