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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

# ALBANIA

# CONTENT

# INTRODUCTION

57.     The mandate and overall objectives for the emission inventory review process under the LRTAP Convention is given by the UNECE document '*Updated methods and procedures for the technical reviews of air pollutant emission inventories reported under the Convention*'[1] – hereafter referred to as the 'Review guidelines 2018'.

58.     This annual review, has checked all pollutants covered by LRTAP Convention and its protocols ($SO_2$, NOx, NMVOC, $NH_3$, plus $PM_{10}$ $PM_{2.5}$, BC, 3 HMs and $POP_S$) for the time series years 1990–2017 reflecting current priorities from EMEP Steering Body and the Task Force on Emission Inventories and Projections (TFEIP). HMs and POPs have been reviewed to the extent possible.

59.     This report covers the stage 3 centralised review of the UNECE LRTAP Convention of Norway coordinated by the EMEP emission centre CEIP acting as review secretariat. The review took place from 24th June 2019 to 28th June 2019 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 – Dan Wakeling (UK), Energy – Benjamin Cuniasse (France) and Kees Peek (the Netherlands), Transport – Giorgos Mellios (EU) and Magdalena Zimakowska-Laskowska (Poland), IPPU – Mirela Poljanac (Croatia) and Michaela Titz (Austria), Agriculture - Rikke Albrektsen (Denmark) and Simone Haider (Austria), Waste – Risto Saarikivi (Czechia).

60.     Kristina Saarinen (Finland) was the lead reviewer. The review was coordinated by Katarina Marečková, (EMEP Centre on Emission Inventories and Projections - CEIP).

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[1] Decision 2018/1 adopted by EB: *Updated methods and procedures for the technical review of air pollutant emission Inventories reported under the Convention.* ECE/EB.AIR/142/Add.1
http://www.unece.org/fileadmin/DAM/env/documents/2002/eb/air/EB%20Decisions/Decision_2018_1.pdf

# PART A: KEY REVIEW FINDINGS

61.     The ERT recognises the level of effort undertaken by Albania in providing an inventory to be reviewed under the UNECE CLRTAP. The ERT thanks Albania for actively providing responses to most of the questions of the ERT during the review that enabled the ERT to conduct a review of the inventory and to give recommendations for further development of the inventory.

62.     Based on the review and the responses received during the review, the ERT recommends that Albania develops a national system for air pollutant inventories with sufficient resources which covers both expertize in the different sectors as well as the general management of the inventory. The ERT recommends that that an inventory team should be established on a permanent basis with guaranteed resources, sufficient skills and access to data sources.

63.     The ERT notes that Albania's National Communication submissions are publicly available on the UNFCCC website. The GHG inventory is currently prepared under a project of UNDP. The ERT recommends Albania to ensure the correlation of both inventories..

64.     The ERT noted that the inventory is partly in line with the EMEP/EEA Emission Inventory Guidebook and the UNECE Reporting Guidelines.

8.     Albania submitted NFR tables under the CLRTAP on 15$^{th}$ February 2019 and therefore within the deadline of 15$^{th}$ February 2019.  Albania did not submit an IIR under the CLRTAP for the 2019 submission and therefore the IIR submitted on 14$^{th}$ May 2018 was used in the review. The submission did not include data on projections, large point sources (LPS) emission data or gridded emissions data.

9.     Transport emissions are calculated on basis of fuels sold.

10.     The ERT identified possible under- and over-estimations, however, due to the lack of information and data, technical corrections could not be made.

11.     The ERT found that there is need to improve the inventory in the areas of accuracy, transparency, completeness, comparability and consistency as explained in details below and in the sub-sector specific recommendations.

   a) Documentation of emission sources occurring in the country, documentation of methods and data used in calculation of emissions

   b) Explanation of drivers behind emission trends and recalculations,

   c) Use of notation keys

   d) Completeness and consistency of the time series, pollutants and sources

   e) Use of appropriate tier methods for all key categories (Tier 2 or higher tier methods)

## INVENTORY SUBMISSION

65.      In the 2019 submission Albania reported emissions in the old NFR version 2009-1 format including NOx, CO, NMVOC, SOx, NH3 and PM$_{10}$ from 1990 to 2017

(the most recent year), PM2.5 from 1990 to 2009, and PCDD/F, heavy metals and POPs from 1990 till 2009. TSP emissions were reported from 2005 to 2009 as national totals. Albania did not report national totals for POPs and heavy metals. Albania did not report activity data in the NFR tables. The ERT recommends Albania to follow the Reporting Guidelines for (1) reporting the emissions in the latest NFR format, (2) presenting the full time series for all pollutants and (2) reporting activity data used in the calculations.

66.     Albania did not submit an IIR under the CLRTAP for the 2019 submission. The ERT recommends that Albania submits an IIR under the CLRTAP annually using the recommended structure presented in Annex II of the Reporting Guidelines, in their 2020 submission.

67.     The submission did not include data on projections, large point sources (LPS) emission data or gridded emissions data. The ERT recommends Albania to include data on projections, LPS and gridded emissions in its next submissions.

## KEY CATEGORIES

68.     Albania did not carry out a key category analysis (KCA) in their latest IIR submission, i.e. submission in 2018 but they included a KCA in their 2017 submission for $SO_x$, $NO_x$, NMVOC, $NH_3$, $PM_{10}$ and CO, and it was consistent with the Guidebook. The ERT recommends that Albania reports a KCA consistent with the Guidebook in their next submission.

## QUALITY

# Transparency

69.     The ERT recognises the level of effort undertaken by Albania in providing an inventory and documentation that enabled the ERT to undertake a review.

70.     The ERT recognizes that according to the UNECE Reporting Guidelines (ECE/EB.AIR/125) the Parties should for transparency reasons clearly explain the data sources, assumptions and methodologies used for the inventory creation (para 12) and that the submission of an IIR is strongly encouraged (para 43). Lack of sufficient documentation in an IIR does not allow a technical review, thus the Party needs to provide the missing documentation during the review. In this technical review report recommendations are given instead of encouragements in cases where there is need to improve the documentation of data, methods and assumptions used in the inventory.

71.     The ERT notes that Albania provides brief general information about the trends of the main pollutants in its IIR, however, not at source category level, and also provides information on the completeness of the inventory (Table 4 of the 2018 IIR submission) .The ERT also notes that only for some sectors information is provided on how the emissions are estimated. To improve the transparency, the ERT identified further improvement needs e.g. for the issues listed below (see detailed recommendations under sector specific recommendations):

(a)     To complete information to explain trends of all pollutants.

(b)     To provide complete and detailed information on the methodologies, emission factors and activity data used in the calculation of emissions for all pollutants and all sources and years.

(c)     To provide references to the sources of this information.

(d)     To provide more information on assumptions made for the calculations.

(e)     To report activity data in the NFR tables.

72.     The ERT notes that Albania has reduced the use of zero values in the NFR tables as recommended in the 2012 CLRTAP S3 in-depth review report. However, in some cases Albania still uses zero values for some pollutants. The ERT recommends Albania to use the appropriate notation keys e.g. "NO" where emissions are "not occurring", "NE" where emissions are "not estimated" and "IE" where emissions are "included elsewhere" for reporting where estimates are not available or necessary according to the definitions of notation keys in the Reporting Guidelines.

## Completeness

73.     The ERT acknowledges the effort to which Albania has gone to provide estimates of emissions for the sub-sectors and pollutants that were included in this review. However, the ERT notes that there is place for improvement to complete the inventory by estimating and reporting the missing emissions to enable a full review for all pollutants from all categories for all years.

74.     Albania uses the notation key "NE" (Not estimated) in a number of areas, and an explanation is provided in the 2017 IIR in the general assessment of completeness chapter. However, instead of using the notation key "NE" the ERT recommends Albania to complete the time series by reporting all values for all years.

75.     The ERT notes that there are missing values in the time series and acknowledges the lack of activity data available to Albania. Because of the lack of statistical data, the ERT recommends Albania to study possible methods to derive the missing data using other surrogate data.

76.     The ERT notes lack of completeness regarding the following issues (described in more details under the sector specific recommendations) and recommends to include the missing estimates to the next submission:

(a)     $PM_{2.5}$ emissions, currently reported only from 1990 to 2009;

(b)     TSP emissions, currently reported only from 2005 to 2009;

(c)     POP emissions currently reported only until 2009;

(d)     Missing values in the time series for all pollutants.

77.     The ERT notes that Albania's National Communication submissions are publicly available on the UNFCCC website. The GHG inventory is currently prepared under a project of UNDP. The ERT recommends Albania to ensure the correlation of both inventories..

78.     The ERT reiterates the encouragement from the previous review to include black carbon emissions in the next submission.

## Consistency, including recalculations and time-series

79.     The ERT noted several inconsistencies in emission values and notation keys throughout the time series as explained under the sub-sector specific recommendations below. The ERT recommends that regarding the missing emissions in the time series Albania should pay attention to consistency issues, and implement corrections where needed and calculate all values according to the latest version of the EMEP/EEA Guidebook.

80.     The ERT noted that in the IIR recalculations are mentioned but there is no clear section or quantitative information on recalculations in the 2018 IIR. The ERT therefore recommends Albania to document the reasons behind the recalculations and the methods used, as well as the impacts on the time series, as requested in Annex II of the Reporting Guidelines, in the next submission. In case no recalculations have been performed, the ERT recommends Albania to clearly document that in the IIR. The ERT notes that according to responses received from Albania during the review, there are plans to provide recalculations in the 2020 submission.

## Comparability

81.     Albania states in its 2018 IIR submission that methodologies and emission factors from the EMEP/EEA Guidebook 2016 are applied. The ERT was not able to verify this in all cases, however, recommends that Albania always checks that the latest version of the EMEP/EEA Guidebook is applied. Using the methodology presented in the Guidebook ensures that the inventory is comparable with those of other reporting Parties.

82.     The ERT notes that the inventory of Albania is not completely comparable with those of other reporting Parties also because Albania submitted data in the old NFR09 (Version 2009-1) format. The ERT recommends Albania to follow the Reporting Guidelines and to report future submissions in the latest NFR format The ERT recommends Albania to report activities separately under each respective NFR category and suggests Albania to use the mapping table linking different reporting formats, that is available on the CEIP homepage (http://www.ceip.at/ms/ceip_home1/ceip_home/reporting_instructions/), which provides information on how SNAP and NFR codes are linked e.g. to NACE, E-PRTR, GAINS, IPCC and CRF codes.

83.     The ERT also identified cases where the allocation of emissions was not fully in line with the Reporting Guidelines (see sub-sector specific recommendations) and recommends that Albania corrects the allocations in line with the Guidelines.

## CLRTAP/NECD comparability

84.     Albania is not an EU country and therefore does not report emissions under the EU National Emission Ceilings (NEC) Directive.

## Accuracy and uncertainties

85.     The ERT found some potential under- or overestimates because tier 2 or higher methodologies have been applied only to some of the key categories. The ERT therefore made technical corrections as presented under chapter "Technical Corrections" below.

86.     The ERT notes that Albania uses tier 1 methods for many key categories and therefore recommends Albania to use tier 2 or higher tier methods for all key categories in line with the Reporting Guidelines in order to increase the accuracy of the inventory. The ERT acknowledges the lack of activity data available to Albania, and recommends that Albania develops methods to derive the missing data from other surrogate data.

87.     Albania did not provide a quantitative uncertainty analysis as part of the 2018 submission. The ERT recommends the Party to carry out an uncertainty analysis, at least for key categories, and to describe the quantification of uncertainties and the results in the IIR. The ERT notes that Albania plans to report the results of a quantitative uncertainty analysis in their 2020 submission. The ERT recommends that Albania uses the results of the uncertainty analysis for the prioritization of improvements in the inventory.

## Verification and quality assurance/quality control approaches

88.     The IIR does not provide information on the verification of the inventory, however, during the review. Albania indicated that they plan to provide information on verification in their 2020 submission. The ERT welcomes this plan and recommends Albania to provide the information in the next submission.

89.     The quality control and quality assurance (QA/QC) procedures carried out for the air pollutant inventory are briefly described in the IIR. According to the IIR common statistical quality checks are carried out, however, sector specific checks are not documented in the IIR. The ERT recommends Albania to provide information on sector specific QA/QC procedures and their results in future submissions. The ERT notes that during the review Albania informed that they plan to provide sector specific QA/QC procedures and their results in their 2020 submission.

## Reporting of Condensable Particulate matter

90.     Albania did not provide information on condensable within their 2018 IIR submission. The ERT recommends that Albania provide this information in their 2020 IIR submission.

## FOLLOW-UP TO PREVIOUS REVIEWS

91.     The ERT commends Albania for the improvements since the previous stage 3 in-depth review; for instance Albania now reports $PM_{2.5}$ emission from 1990-1999 that were not reported previously and has reduced the use of zero (0) values in the NFR tables.

92.     The previous CLRTAP S3 in-depth review recommended Albania to report activity data in the NFR tables. The ERT, however, noted that Albania still does not

report activity data, The ERT therefore reiterates the recommendation from the previous review to include activity data in the NFR tables

## AREAS FOR IMPROVEMENTS IDENTIFIED BY ALBANIA

93.     The ERT noted that in the 2018 IIR several areas for improvement were identified as informal questions. The ERT recommends that Albania develops a detailed improvement plan with schedules of actions and reports this as part of their IIR.

94.     Albania provided an inventory improvement plan after the review on the 1st July. Due to the late submission, the ERT was not able to fully review the plan, which includes tasks with classification of urgency, planned timelines and responsible persons. The ERT commends Albania for the plan and recommends Albania to update the plan regularly and to follow-up the actual implementation of the tasks.

## TECHNICAL CORRECTIONS CONSIDERED AND OR CALCULATED BY THE ERT

95.     The ERT identified several inconsistencies in the inventory, however, it was not possible for the ERT to propose technical corrections due to missing data and rather limited information.

# PART B: RECOMMENDATIONS FOR IMPROVEMENTS TO THE PARTY

## CROSS CUTTING IMPROVEMENTS IDENTIFIED BY THE ERT

96. The ERT identified the following cross-cutting issues for improvement and recommends Albania in its next submission to:

    (a) Complete the time series for all pollutants from 1990 onwards (for particles from 2000).

    (b) Report future submissions in the latest NFR format.

    (c) Present activity data in the NFR tables.

    (d) Update the IIR annually in order to document the latest inventory and submit it by the deadline of 15th March.

    (e) Investigate the relevance of sources currently reported as "NE", estimate and report the occurring emissions or, assess the quantitative importance of emissions from these sources, and provide a description of the source and the emission levels in the IIR as well as to document whether the activity existed in a certain year or not, or under which NFR category it was included.

97. Apply a tier 2 or a higher tier methodology for key categories. The ERT acknowledges that the lack of activity data available to Albania makes this difficult but recommends that Albania develops methods to derive the missing data using other surrogate data.

    (g) Improve the transparency of their inventory by documenting the methods and activity data used in the calculation of emissions and including references to the data sources in the IIR.

    (h) Check the use of notation keys against the definitions provided in the Reporting Guidelines.

    (i) Report emission values or notation keys instead of zero (0) values.

    (j) Provide explanations on drivers behind the trends and to explain all outliers.

    (k) Provide information on sector specific QA/QC procedures and their results

    (l) Document recalculations and their impacts on the inventory, and also to clearly document if no recalculations have taken place, in the IIR.

    (m) Develop a detailed improvement plan with schedules of actions and to report this as part of their IIR.

    (n) Include data on projections, LPS and gridded emissions.

    (o) Include information on condensable PM emissions.

# SECTOR SPECIFIC RECOMMENDATIONS FOR IMPROVEMENTS IDENTIFIED BY ERT

# ENERGY

## Review Scope

| Pollutants Reviewed | $SO_2$, $NO_x$, NMVOC, $NH_3$, TSP, $PM_{10}$ & $PM_{2.5,}$ | | |
|---|---|---|---|
| **Years** | 1990 – 2017 | | |
| **Code** | **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 | | 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 | X | | X |
| 1A3ei | Pipeline transport | X | | X |
| 1A3eii | Other | X | | 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 | | X |
| 1B1b | Fugitive emission from solid fuels: Solid fuel transformation | X | | X |
| 1B1c | Other fugitive emissions from solid fuels | X | | X |
| 1B2ai | Fugitive emissions oil: Exploration, production, transport | X | | 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 |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

NOTE: Contrary to other sectors' reviews, the ERT did not use the 2018 IIR instead of a 2019 IIR, which Albania did not submit. The ERT notes that it was not possible for the ERT to carry out a comprehensive and detailed review for the energy sector as for such a review an IIR and NFR tables from the same submission are needed.

**Transparency**

98.    Albania did not provide an IIR, therefore the ERT strongly recommends that Albania provides an IIR annually where the methods and activity data used in the calculation of emissions are documented.

99.    In the previous stage 3 review report (from 2017) the ERT recommended Albania to use the appropriate notation keys instead of zero values. The ERT notes that Albania still uses zero values for some pollutants in 1A1b and 1A2b and reiterates its recommendation to use the appropriate notation keys instead of zero values.

**Completeness**

100.    The ERT notes that Albania did not provide activity data in the NFR tables for the period 1990-2017.The ERT strongly recommends that Albania provides NFR Tables with activity data and where necessary also in the IIR for the next submission.

101.    The ERT noted that Albania uses the notation key "NE" in for several pollutants across several NFR categories. To avoid underestimations, the ERT recommends that Albania includes information on how the issue of missing emissions (NE) will be addressed in the improvement plan in the IIR, either by obtaining data to allow an emission estimate to be made, or by reporting the emissions as not applicable (NA), in cases where emissions do not occur in Albania, and to explain this in the IIR.

102.    The ERT found several missing values in the time series for many pollutants in Albania's energy sector inventory. The ERT recommends that Albania completes the inventory by reporting the missing estimates in the next submission.

**Consistency including recalculation and time series**

103.    Due to the lack of an IIR it was not possible for the ERT to assess the consistency of data and methods used in the time series. Also, due to the lack of information on recalculations, it was not possible to review any recalculations. The ERT recommends that Albania provides information on methods used for calculating the emission time series and in recalculations in the IIR of the next submission.

**Comparability**

104.    The ERT notes that Albania submitted its emissions in the old NFR-2009 format and strongly recommends Albania to use the latest NFR reporting format in the next submission.

105.    Due to the lack of an IIR, the ERT was unable to conclude whether the methodologies used are in accordance with the EMEP/EEA Guidebook and thus comparable with inventories of other reporting Parties. The ERT recommends Albania to always use the latest version of the Guidebook and to document the methods used in the IIR.

**Accuracy and uncertainties**

106.    Albania did not provide an IIR with information on QA/QC and uncertainties and therefore the ERT is not able to assess the accuracy of the inventory. The ERT recommends that Albania provides information on QA/QC procedures and uncertainties as part of its next submission.

**Condensable Particulate Matter**

107.    Albania did not provide an IIR or other explanatory information on the condensable component of PM emissions for the energy sector inventory. The ERT recommends that Albania provides information on condensable particulate matter as part of its next submission.

**Improvement**

108.    During the review Albania provided the ERT two files, both including a new tool to calculate emissions for the categories 1A2 and 1A4 of the energy Sector. The ERT notes that the new calculation tool uses energy data from EUROSTAT and emission factors from the 2016 Guidebook. Albania also informed the ERT that their intention is to calculate emissions from NFR categories 1A1 and 1A5 under the energy sector with this tool to the next submission. The ERT strongly recommends Albania to calculate the emissions from the energy sector with energy data from EUROSTAT and emission factors from the latest version of the Guidebook in next submission.

## Potential Technical Corrections

109.    Due to the lack of data and information it was not possible for the ERT to assess possible under- and overestimations of the Party's emission estimates. The ERT therefore did not prepare technical corrections for Albania's energy sector inventory.

## Sub-Sector Specific Recommendations

### Category issue 1: 1.A.1.b

110.    The ERT notes that in the NFR tables for this sector $PM_{10}$ emissions are reported and that for TSP the notation key "NA" is used. To a question on the issue Albania responded that the use of the notation keys will be reviewed and revised. The ERT recommends the Party to review and revise the notation keys where needed.

### Category issue 2: 1A2a / 1A4ai / 1A4bi / 1A4ci/ 1B1a / 1B2aiv

111.    The ERT notes that in the NFR tables for these sectors $PM_{10}$ emissions are reported and that for TSP and $PM_{2.5}$ the notation key "NE" is used. To a question on the issue Albania responded that the use of the notation keys will be reviewed and revised. The ERT recommends the Party to review and revise the notation keys where needed.

# TRANSPORT

## Review Scope

| Pollutants Reviewed | | All | | |
|---|---|---|---|---|
| **Years** | | 1990 – 2017 | | |
| **Code** | **Name** | **Reviewed** | **Not Reviewed** | **Recommendation Provided** |
| 1A2gvii | Mobile Combustion in manufacturing industries and construction | 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 | | X |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes) please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

### Transparency

112.    The ERT noted that the transport sector inventory is not transparent. In order to better assess the quality of the estimations, a comprehensive and detailed description of the applied methodology, activity data, parameters and used emission factors, should be reported distinctly by a category, providing the correct reference to information sources. Also the choice of the notation keys should be adequately explained. The ERT strongly recommends Albania to provide a comprehensive description of methods used to calculate emissions in the IIR.

113.    The ERT detected emission fluctuations, drops and peaks, missing estimates and discordances regarding the use of notation keys. The ERT recommends Albania to provide explanations on the emission trends in the IIR.

114.    In response to questions by the ERT the Party sent a general response where for the transport sector it was explained that data are missing for aviation, railways and navigation subsectors for several years, and this issue needs to be further investigated, and regarding some pollutants not being reported, critical issues about completeness, consistency and transparency have to be clarified. The ERT strongly recommends Albania to verify and update the transport sector inventory's time series according to the latest version of the EMEP/EEA Guidebook, and recommends the Party to document all the related information in a transparent and comprehensive way, in particular on recalculations, in the IIR.

115.    Albania has calculated emissions from the road transport sector, however little information has been provided in the IIR on the calculations and methodology. The ERT strongly recommends the Party to provide a more detailed explanation of calculations and extrapolation including the rationale, as well as information on the impact of the transport sector on total emissions and implication to trends in its IIR. Also the ERT recommends starting using the latest version of COPERT V model.

## Completeness

116.    The ERT considers the transport sector to be incomplete due to numerous emission sources reported as "NE" throughout the time series. The ERT recommends the Party to estimate and report all missing emissions and years on the basis of the latest version of the EMEP/EEA Guidebook.

117.    Based on the review findings, the ERT strongly recommends Albania to review and update the historical time series for transport data, complete the inventory, pay attention to consistency issues related to both emissions values and notation keys, with a reference to all the relevant pollutants and emission source categories, according to the latest version of the EMEP/EEA Guidebook. The ERT also recommends Albania to provide a comprehensive and transparent documentation concerning recalculations in the IIR, for the next submission.

## Consistency including recalculation and time series

118.    The ERT found inconsistencies in the transport sector inventory of Albania regarding both the emission values and notation keys throughout the time series. The ERT strongly recommends Albania to check the time series, pay attention to consistency issues, to implement corrections if needed and to calculate and to report the missing values according to the latest version of the EMEP/EEA Guidebook, particularly considering the review findings. The ERT also recommends Albania to transparently document the recalculations in the IIR.

## Comparability

119.    The ERT notes that the transport sector inventory is not fully comparable with those of other reporting Parties due to inconsistency of emission calculation methodologies and allocation of emissions under the NFR categories. The ERT therefore strongly recommends Albania to revise and update the emission estimates, according to the latest version of the Guidebook, and to harmonize the methodologies

applied over the years, and also to revise the allocation of data according to the Reporting Guidelines.

**Accuracy and uncertainties**

120.    The ERT noted that no quantitative uncertainty analysis has been performed by Albania. The ERT recommends Albania to perform an uncertainty analysis for the transport sector as part of the revision and to use the results of the analysis to prioritize improvements in the inventory.

121.    The Party has described some basic QA/QC checks in the IIR. The ERT recommends the Party to implement source specific QA/QC procedures for the transport sector and encourages the Party to document these as well as the results of the QA/QC checks in the IIR.

**Condensable Particulate Matter**

122.    The Party did not provide information of whether $PM_{2.5}$ includes/excludes the condensable component. The ERT recommends Albania to include such information in the next submission.

**Improvement**

123.    The ERT notes that the Party made no improvements in the IIR since the last Stage 3 review. The Party should explain why the IIR is not annually updated and reported.

124.    The ERT recommends the Party to revise and update the transport sector time series, using at least tier 2 methods from the latest version of the EMEP/EEA Guidebook for pollutants for which the transport sector sub-categories are key categories, and to transparently document the recalculations in the IIR. The ERT recommends Albania to improve the transport sector inventory and in particular to use the latest COPERT 5 version for calculating road transport emissions.

## Potential Technical Corrections

125.    The ERT did not prepare any technical corrections for the transport sector inventory of Albania due to lack of data.

## Sub-Sector Specific Recommendations

**Category issue 1: 1.A.3.ai(i) International aviation (LTO) - All Pollutants - Completeness, Consistency, Accuracy**

126.    The ERT noted that emissions from international aviation (LTO) are not estimated from 1990 to 1992, although the emissions are estimated from 1993 to 2017. During the review, Albania assured to provide the calculation file for the NFR sector 1A3 in excel format including documentation on methodology, activity data and emission factors and a short explanation of the trend. In case of lack of data and/or resources Albania would provide the inventory improvement plan with prioritization of actions which have to be undertaken. However, the Party provided an inventory improvement plan after the review on the 1st July, which unfortunately was too late for the review.. The ERT strongly and recommends Albania to complete the inventory with

these estimates or if there is no data to estimate emissions, to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 2: All transport sector - PM$_{2.5}$, TSP - Completeness, Consistency

127.    The ERT noted that emissions from all transport sector categories are reported as "NE", however emission factors are available in in the 2016 EMEP/EEA Guidebook. During the review, Albania assured to provide the calculation file for the transport sector in excel format including documentation on methodology, activity data and emission factors and short explanation of the trend. In case of lack of data and/or resources Albania would provide the inventory improvement plan with prioritization of actions which have to be undertaken. However, the Party provided an inventory improvement plan after the review on the 1$^{st}$ July, which unfortunately was too late for the review.. The ERT strongly and recommends the Party to complete the inventory with these estimates or if there is no data to estimate emission to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 3: All transport sector - All pollutants - Accuracy

128.    The ERT noted that in the 2018 IIR it is not explicitly mentioned which tier methods were used for key categories. During the review, Albania assured to provide the calculation file for the transport sector in excel format including documentation on methodology, activity data and emission factors and short explanation of the trend. In case of lack of data and/or resources Albania would provide the inventory improvement plan with prioritization of actions which have to be undertaken. However, the Party provided an inventory improvement plan after the review on the 1$^{st}$ July, which unfortunately was too late for the review.. The ERT strongly and recommends the Party to provide this information in the upcoming IIR.

## Category issue 5: 1.A.5.b.v - All pollutants - Completeness, Consistency

129.    The ERT noted that emissions for 1A3bv (for years 2010-2015), 1A3biv (for years 1990-2008 and 2010-2015) and 1A3dii (for years 1990-1992 and 2010-2015) are reported as "NE". During the review, the Albania announced to provide the calculation file for the transport sector in excel format including documentation on methodology, activity data and emission factor and short explanation of the trend. In case of lack of data and/or resources Albania would provide the inventory improvement plan with prioritizations of actions which have to be undertaken. However, the Party provided an inventory improvement plan after the review on the 1$^{st}$ July, which unfortunately was too late for the review. The ERT recommends the Party to complete the inventory with these estimates or if there is no data to estimate emission to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 6: 1.A.3.c and 1.A.3.b.iv - HM, POPs - Completeness, Consistency

130.     The ERT noted that in case of the NFR categories 1A3c and 1A3biv emissions of heavy metals and POPs, emissions from 1990-2008 and from 2016-2017are reported as zero. During the review, Albania has indicated that they will use the proper notation key. The ERT welcomes this plan and recommends the Party to complete the inventory with these estimates or if there is no data to estimate PAH emission to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 7: 1.A.3.b.iv - All pollutants - Completeness, Consistency

131.     The ERT noted that all pollutants emissions from category 1A3biv emissions are estimated only for 2009 and for 2016-2017. During the review, Albania announced to provide the calculation file for the transport sector in excel format including the documentation on the methodology, activity data and emission factors and a short explanation of the trend. In case of lack of data and/or resources Albania would provide the inventory improvement plan with prioritization of actions which have to be undertaken. However, the Party provided an inventory improvement plan after the review on the 1st July, which unfortunately was too late for the review.. The ERT recommends the Party to complete the inventory with these estimates or if there is no data to estimate emissions, to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 8: All transport sector - HM, POPs - Completeness, Consistency

132.     The ERT noted that that for all road transport categories emissions of heavy metals and POPs from 2010-2017 are reported as "NE", however the emission factors are available in the 2016 EMEP/EEA Guidebook. During the review, Albania did not answer the question on the issue. The ERT strongly recommends the Party to complete the inventory with these estimates or if there is no data to estimate emissions, to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

## Category issue 9: 1.A.3.b - Pb - Transparency, Completeness, Consistency, Accuracy

133.     The ERT observed a noticeable decline for Pb emissions from road transportation in the time series after 2005. From 2010 onwards that the emissions are reported as NE". However, information on the lead content in fuel in Albania should be publicly available. During the review, the Albania did not answer this question. The ERT recommends the Party to complete the inventory with emission estimates or if there is no data to estimate emissions, to use the proper notation key and to justify this in the IIR. The inventory improvement plan, which Albania submitted after the review, is discussed under the general sector chapter "Areas for Improvements Identified by Party",

**Category issue 10: All transport sector - All pollutants - Transparency, Completeness, Consistency**

134.    The ERT recommends Albania to check and update all transport sector time series with regards to consistency and comparability issues, according to the latest version of the EMEP/EEA Guidebook, and also recommends the Party to provide transparent and comprehensive documentation in the IIR.

# INDUSTRIAL PROCESSES

## Review Scope

| Pollutants Reviewed | SO2, NOx, NMVOC, NH3, PM10 & PM2.5 | | |
|---|---|---|---|
| **Years** | 1990 – 2017 + (Protocol Years) | | |
| **Code** | **Name** | **Reviewed** | **Not Reviewed** | **Recommendation Provided** |

| Code | 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 | x | | x |
| 2B1 | Ammonia production | x | | x |
| 2B2 | Nitric acid production | x | | x |
| 2B3 | Adipic acid production | x | | x |
| 2B5 | Carbide production | x | | x |
| 2B6 | Titanium dioxide production | x | | x |
| 2B7 | Soda ash production | x | | x |
| 2B10a | Chemical industry: Other | x | | x |
| 2B10b | Storage, handling and transport of chemical products | x | | x |
| 2C1 | Iron and steel production | x | | x |
| 2C2 | Ferroalloys production | x | | x |
| 2C3 | Aluminium production | x | | x |
| 2C4 | Magnesium production | x | | x |
| 2C5 | Lead production | x | | x |
| 2C6 | Zinc production | x | | x |
| 2C7a | Copper production | x | | x |
| 2C7b | Nickel production | x | | x |
| 2C7c | Other metal production | x | | x |
| 2C7d | Storage, handling and transport of metal products | x | | x |
| 2D3b | Road paving with asphalt | x | | x |
| 2D3c | Asphalt roofing | x | | x |
| 2H1 | Pulp and paper industry | x | | x |
| 2H2 | Food and beverages industry | x | | x |
| 2H3 | Other industrial processes | x | | x |
| 2I | Wood processing | x | | x |
| 2J | Production of POPs | x | | x |
| 2K | Consumption of POPs and heavy metals (e.g. electrical and scientific equipment) | x | | x |
| 2L | Other production, consumption, storage, transportation or handling of bulk products | x | | x |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

135.	The ERT noted that during the review that Albania put a lot effort in preparation of proper responses. The ERT recommends the Party to include sector experts responsible for IPPU in the national systems in order to guarantee an improvement of the inventory quality over time. The ERT notes that first steps are already taken.

### Transparency

136.	The ERT notes that the industrial processes emission inventory lacks transparency and should be more detailed. No activity data is presented in the IIR or the NFR tables. The ERT strongly recommends Albania to provide the missing information on the methods, EFs and activity data used, including the references of data sources in the IIR of the next submission, and to use the latest version of the EMEP/EEA Guidebook.

137.	The ERT noted that emissions from some sources fluctuated over time and that the emission trends are not described for the sub-sectors in the IIR, but are only described for the inventory as a whole. The ERT thus recommends Albania to provide transparent explanations for each subsector.

138.	The ERT highly appreciate the efforts the Party to provide at least qualitative information at sector level via an NFR 14 table filled with notation keys for all categories in the sector. The ERT recommends the Party to complete the inventory by estimating all missing emissions to the next submission.

### Completeness

139.	The ERT notes that Albania's inventory is to a large extent incomplete, with many emissions sources reported as "NE". The ERT recommends Albania to calculate emissions, using the methods provided in the latest version of the EMEP/EEA Guidebook starting from the most important sources. The ERT provides recommendations for some subsectors below and recommends Albania to collect activity data and to calculate emissions also for the sources where data is missing, by deriving activity data using other surrogate data.

### Consistency including recalculation and time series

140.	The ERT notes that the IIR does not provide information on recalculations and no information on methods, emission factors and activity data regarding the time series. The ERT could thus not assess the consistency of the time series. During the review, Albania responded that they try to send new calculations during the review week, however no recalculations were sent. The ERT strongly recommends Albania to carry out recalculations and report them in the next submission.

141.	The ERT identifies significant fluctuations in time series, as for some sectors estimates are just provided for one or two years. The ERT recommends Albania to include emission estimates for the whole time series to the next submission.

### Comparability

142.	As the IIR does not provide information on the methods used, therefore the comparability to the inventories of other reporting Parties cannot be assessed. The ERT strongly recommends Albania to calculate emissions according to methods in the latest

version of the EMEP/EEA Guidebook and to document the methods and data used in the IIR.

143.    Albania's inventory is not fully comparable to those of other reporting Parties in terms of sectors reported because Albania uses the old NFR format instead of the NFR 2014-2 format. The ERT recommends Albania to use the latest format of the NFR table.

**Accuracy and uncertainties**

144.    The ERT noted that no quantitative uncertainty analysis has been performed by Albania. The ERT recommends that Albania performs an uncertainty analysis for the industrial processes sector and includes the results in the next submission.

**Condensable Particulate Matter**

145.    The Party did not provide information of whether $PM_{2.5}$ includes/excludes the condensable component. The ERT recommends Albania to include such information in the next submission.

**Improvement**

146.    As response to questions presented during the review Albania informed the ERT that they will consider the recalculation of emissions. The ERT recommends Albania to use the latest version of the EMEP/EEA Guidebook for the recalculations and to document the recalculations in the IIR.

147.    During the review Albania sent NFR 2014-2 format tables including all notation keys relevant for the IPPU sector. The ERT appreciate the efforts of the Party to provide at least qualitative information on the sector and recommends Albania to complete the inventory with emission estimates.

148.    On a question regarding inventory improvement, Albania replied to develop an improvement plan for the industrial processes sector. The ERT strongly recommends the Party to develop and maintain an annual improvement plan including prioritization of actions to be taken.

## Potential Technical Corrections

149.    The ERT did not prepare any technical corrections for the industrial processes sector of Albania.

## Sub-Sector Specific Recommendations

150.    During the review, Albania responded to all questions of the ERT that they will provide revised estimates for the specific sectors. The ERT strongly recommends Albania to recalculate the inventory according to the latest version of the EMEP/EEA Guidebook and to rewrite the IIR simultaneously with the recalculations. The ERT also strongly recommends Albania to ensure that all default EFs available in the Guidebook are used, all the data sources used are correctly cited, and that especially where country specific EFs are used, the references to the sources and the values used are documented.

**Category issue 1: 2.A.1 Cement production**

151.    The ERT noted that the emission trends on pollutant level for cement production are inconsistent. To the question on the issue Albania replied that the emissions from this sector will be completely revised as the emissions are mainly combustion related. The ERT recommends the Party to revise the emission estimates or to use the proper notation keys and to document the calculations and the use of notation keys in the IIR.

**Category issue 1: 2.A.5.b Construction and demolition**

152.    Albania only submitted $PM_{10}$ emissions of construction and demolition for 2016 and 2017. To a question on the issue the Party stated that due to lack of data and resources, estimation of emissions from this sector was not on highest priority and those relevant actions and improvements that need to be done are listed in the inventory improvement plan. The ERT recommends Albania to implement the improvements identified and to update an improvement plan annually and to include it in the IIR submission.

**Category issue 1: 2.C.1 Iron and Steel production**

153.    The ERT noted that the emission trends on pollutant level for iron and steel production are inconsistent. To a question on the issue Albania replied that the emissions from this sector will be revised as well as the uses of notation keys. The ERT recommends the Party to revise the emission estimates according to the Guidebook and to use proper notation keys where necessary, and to document the calculations and the use of notation keys in the IIR.

**Category issue 1: 2.C.3 Aluminium production**

154.    The ERT notes that under NFR 2C5e (NFR09) Albania reports emissions from secondary aluminium production for the year 2010. To a question on the issue Albania replied that the emissions from this sector will be completely revised as the emissions are mainly combustion related. The ERT recommends the Party to revise the emissions according to the Guidebook or to use a proper notation key, and to document the calculations and the use of notation keys in the IIR.

# SOLVENTS

## Review Scope

| Pollutants Reviewed | SO$_2$, NOx, NMVOC, NH$_3$, PM$_{10}$ & PM$_{2.5}$ | | | |
|---|---|---|---|---|
| **Years** | 1990 – 2017 + (Protocol Years) | | | |
| **Code** | **Name** | **Reviewed** | **Not Reviewed** | **Recommendation Provided** |
| 2D3a | Domestic solvent use including fungicides | 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 | X | | x |
| 2G | Other product use | X | | x |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

### Transparency

155.    The ERT noticed progress since the last review regarding the reporting of NFR tables for the solvent sector. However, Albania has not reported activity data for the period 1990–2017. The ERT recommends Albania include activity data both in the NFR tables and in the IIR.

156.    The ERT also noted improvement needs in the use of notation keys and recommends Albania to use the appropriate notation keys in cases where emission estimates are not available or necessary: "NO" where emissions are "not occurring", "NE" where emissions are "not estimated" and "IE" where emissions are "included elsewhere".

157.    The ERT noted that the IIR does not include a chapter for the solvent and other product use sector or provides any information on emissions from solvent use. The ERT reiterates the recommendation from the previous review to provide information on the activities covered by the sector in the country, and to document the methodology, emission factors and activity data in the IIR.

### Completeness

158.    The ERT considers the solvent sector to be incomplete as several sources are reported as "NE". The ERT recommends Albania to calculate all missing emissions by using the latest version of the EMEP/EEA Guidebook. The ERT provides some  recommendations under the sub-sector specific recommendations below.

159.    Albania does not report activity data for the solvent sector in the IIR nor in the reporting tables. The ERT recommends Albania to report activity data in the NFR  tables and in the IIR of the next submission.

160.     Albania does not report emissions from the solvent sector for the period 2010 to 2015 in the NFR tables. The ERT recommends Albania complete the time series for the missing years to the next submission.

## Consistency including recalculation and time series

161.     The ERT could not assess the consistency of reporting because in the IIR 2018 or in the NFR tables no activity data is reported for the solvent use categories.

162.     Albania has not provided information on recalculations for the solvent use sector in the IIR. The ERT recommends Albania to document any recalculations and their impacts on the inventory in the next submission and if no recalculations have been performed, the ERT encourages Albania to also clearly document that in the IIR.

## Comparability

163.     The ERT could not assess the comparability of the inventory to those of other reporting Parties as no information is available on the methods used to calculate the emissions. To ensure comparability, the ERT strongly recommends Albania to use the methods provided in the latest version of the EMEP/EEA Guidebook and to document the methods and data used in the IIR.

164.     Albania reports the emissions in the NFR 2009 format for the solvent and other product use sector. To enable comparability to other reporting Parties the ERT strongly recommends Albania to use the latest format of the NFR tables as requested in the Reporting Guidelines. The ERT recommends Albania to report activities separately under each respective NFR category and suggests Albania to use the mapping table linking different reporting formats, that is available on the CEIP homepage (http://www.ceip.at/reporting_instructions/), which provides information on how SNAP and NFR codes are linked e.g. to NACE, E-PRTR, GAINS, IPCC and CRF codes.

## Accuracy and uncertainties

165.     The ERT notes that neither a quantitative nor a qualitative uncertainty analysis has been provided in the IIR. The ERT recommends Albania to carry out an uncertainty analysis for the sector in order to help inform the improvement process and to provide an indication of the reliability of the inventory data.

166.     The ERT notes that no information on QA/QC checks for the solvent sector has been included in the IIR. The ERT recommends Albania to carry out basic QA/QC checks for the solvent sector and to document them and to report results from the QA/QC procedures in the IIR.

## Condensable Particulate Matter

167.     The Party did not provide information of whether $PM_{2.5}$ includes/excludes the condensable component. The ERT recommends Albania to include such information in the next submission.

## Improvement

168.     The ERT notes that Albania has not carried out improvements for the sector since the last review. The ERT recommends Albania to identify improvement needs in the sector and to include those in the overall improvement plan including a prioritization

of the actions to be taken for the sector, including the findings included in this review report, and to update the improvement plan annually.

169.    During the review Albania sent NFR tables in the 2014 format including all notation keys relevant for the sector. The ERT appreciate the efforts of the Party to provide at least qualitative information on the sector and recommends Albania complete the inventory by estimating all missing emissions to the next submissions.

## Potential Technical Corrections

170.    The ERT did not prepare any technical corrections for the industrial processes sector of Albania.

## Sub-Sector Specific Recommendations

### Category issue 1: 2.D.3, 2.G Other solvent and product use

171.    The ERT investigated, that for 2016 and 2017 emissions from domestic solvent use are calculated on per capita basis. In the NFR tables Albania refers to the per capita value taken from the 1999 Guidelines. To the question on the issue the Party responded that they will revise this estimate. The ERT recommends that Albania recalculates the emissions using the latest version of the Guidebook.

172.    The ERT noted that in the Albanian IIR, there is no information on the methodology, emission factors and activity data used for calculation of emissions from NFRs 2D and 2G. The ERT recommends Albania to include all relevant information regarding source categories in the IIR according to Annex II (Recommended Structure for Informative Inventory Report) of the revised 2014 Reporting guidelines (ECE/EB.AIR.125)

173.    During the review Albania sent NFR tables in the 2014 format including all notation keys relevant for the sector. The ERT recommends Albania to complete the missing estimates using methods from the latest version of the Guidebook.

174.    Albania reports only NMVOC emissions from NFRs 2D3a and 2D3g. However, the ERT considers that in Albania, as in almost all countries, there are activities like: SNAP 060404 fat, edible and non-edible oil extraction, SNAP 060405 application of glues and adhesives, SNAP 060406 preservation of wood, SNAP 060601 use of fireworks, SNAP 060602 use of tobacco and SNAP 060603 use of shoes. According to the 2016 EMEP/EEA Guidebook these activities are mainly sources of NMVOC emissions, and some of them can be sources of also TSP, $PM_{10}$, $PM_{2.5}$, PAHs, PCDD/F, $SO_2$, CO, $NO_x$ and HM emissions. The ERT recommends Albania to collect data and to use the methodology provided in the Guidebook to calculate and report all relevant air pollutant emissions from these activities.

175.    The ERT noted that emissions from NFR categories 2D and 2G have not been calculated for the period 2010 - 2015. The ERT recommends Albania to complete the time series by calculating emissions for the missing years.

# AGRICULTURE

## Review Scope

| Pollutants Reviewed | SO$_2$, NO$_x$, NMVOC, NH$_3$, TSP, PM$_{10}$ & PM$_{2.5}$ | | |
|---|---|---|---|
| **Years** | 1990 – 2017 + (Protocol Years) | | |
| **Code** | **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 | X | | X |
| 3Da1 | Inorganic N-fertilizers (includes also urea application) | X | | X |
| 3Da2a | Animal manure applied to soils | X | | X |
| 3Da2b | Sewage sludge applied to soils | X | | X |
| 3Da2c | Other organic fertilisers applied to soils (including compost) | X | | X |
| 3Da3 | Urine and dung deposited by grazing animals | X | | X |
| 3Da4 | Crop residues applied to soils | X | | X |
| 3Db | Indirect emissions from managed soils | | | X |
| 3Dc | Farm-level agricultural operations including storage, handling and transport of agricultural products | X | | X |
| 3Dd | Off-farm storage, handling and transport of bulk agricultural products | X | | X |
| 3De | Cultivated crops | X | | X |
| 3Df | Use of pesticides | X | | X |
| 3F | Field burning of agricultural residues | X | | X |
| 3I | Agriculture other | X | | X |
| 11A | Volcanoes | X | | X |
| 11B | Forest fires | X | | X |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

176.　In its official submission 2019 Albania has provided a partly complete, but not consistent emission inventory for agriculture for the years 1990-2017. Emissions are reported in the NFR09 format. Agricultural emissions for sectors manure management (4B), agricultural soils (4D), field burning of agricultural wastes (4F) and agriculture

other (4G) have been reported by Albania but no information on activity data was included in the NFR tables.

## Transparency

177. The inventory is generally not transparent as no activity data was included, neither in the NFR tables nor in the IIR submitted in 2019.

178. Albania did not submit an IIR with the current submission and the ERT used the IIR of the previous submission (2018), which does not follow the recommended structure of Annex II of the Reporting Guidelines, and contains no information on activity data and methodologies used. The ERT recommends Albania to complete the IIR annually according to the Reporting Guidelines and to include information for the agriculture sector on activity data (e.g. livestock numbers, N amounts, information on manure management systems etc.) and methodological descriptions (parameters and EFs used) for every single source category for the next submission.

179. Albania uses zero values in the reporting tables for $NO_x$, NMVOC and $SO_x$ emissions from NFRs 4B1a cattle dairy, 4B1b cattle non-dairy, 4B3 sheep, 4B6 horses, 4B8 swine, 4B9a laying hens and 4D1 a synthetic N-fertilizers. During the review week Albania provided revised estimates of $NH_3$, $NO_x$, NMVOC and PM emissions for manure management (4B) but also updated the NFR reporting tables including notation keys instead of zero values. The ERT recommends Albania to include the revised estimates and the notation keys in the next submission. Furthermore, the ERT recommends undertaking QAQC procedures of the calculations (e.g. cross-check of the EF used in the calculations with the GB) and notation keys (see para 131).

## Completeness

180. The ERT considers the agriculture sector to be partially complete. There are some categories and pollutants not covered by the current reporting as explained under the sub-sector specific recommendations below. The ERT reiterates its recommendation from the last review in 2017 and recommends Albania to complete the inventory by estimating and reporting the missing emissions.

## Consistency including recalculation and time series

181. Albania has not provided any information on recalculations in the IIR. The ERT reiterates the recommendation from the previous review 2017 that Albania provides a detailed explanation of any recalculations, including the rationale, the impact on the sector and implication on trends for the agriculture sector in its IIR, or also clearly indicates if no recalculations have been carried out.

182. The ERT considers that the time series of the agriculture sector is not consistent. This issue was already raised in the previous review 2017. In particular, no emissions from livestock categories 4B9b broilers (only $NH_3$ until 2009) and 4B9c turkeys are reported in the NFR tables although FAO statistics provide numbers for these animals. No explanation is provided in the IIR for this. Albania provided revised estimates for the whole manure management sector (4B), including new emission estimates for the mentioned livestock categories, and revised its reporting tables by including the updated emissions and notation keys over the whole time series. The ERT recommends Albania to include these new emission estimates and/or the appropriate

notation keys in its next submission and further recommends the Party to include detailed information on the agriculture sector in its IIR.

## Comparability

183.    Albania reports emissions using the former NFR09 format instead of the latest NFR format as required in the Reporting Guidelines. For the agriculture sector, using outdated NFR format implies a major difference in the NFR categories to be reported. During the review week Albania sent revised emission estimates by using the NFR14 reporting format. The ERT recommends Albania to use the latest NFR format for all sub-sectors in the next submission.

184.    The methods used in the inventory seem to be taken from the 2016 EMEP/EEA Guidebook, which could not be checked as no information on activity data or methods used was available. The ERT recommends that Albania applies the methods from the latest version of the EMEP/EEA Guidebook.

## Accuracy and uncertainties

185.    The ERT notes that most of the emission estimates seem to be based on tier 1 methodologies. Referring to the new emission estimates sent by Albania during the review week, tier 1 methodologies of the 2016 EMEP/EEA Guidebook have been applied. The ERT notes that some sub-sectors in the agriculture sector are key categories for ammonia emissions. The ERT welcomes the improvements presented in the draft improvement plan submitted after the review and reiterates the recommendation from the last review 2017 to apply at least a tier 2 approach for all key sources in future submissions.

186.    Albania has not provided an uncertainty analysis for the agriculture sector emissions. The Party informed the ERT that it is planned to estimate uncertainties for the next submission. The ERT welcomes these plans and strongly recommends Albania to undertake 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.

187.    Albania has provided general information on the QA/QC procedures in place in its IIR of the previous year (2018) but no sector-specific checks are documented. The ERT strongly recommends the Party to establish sector specific OA/QC procedures and to include information on the quality checks and their results in the IIR in coming submissions.

## Condensable Particulate Matter

188.    The Party did not provide information of whether PM2.5 includes/excludes the condensable component. The ERT recommends Albania to include such information in the next submission.

## Improvement

189.    The ERT noticed slight improvements made for the reporting years 2016 and 2017; however these changes have not been implemented consistently over the time series. On request of the ERT, Albania sent revised estimates for sector manure management (4B) for all relevant pollutants ($NH_3$, $NO_x$, NMVOC and PMs) based on the tier 1 approach of the 2016 EMEP/EEA Guidebook using the NFR14 format. The ERT

highly appreciated these efforts undertaken by Albania and thanks for the good cooperation during the review. The ERT considers these calculations as a good starting point and recommends that Albania reports the new emission estimates in the latest NFR format in the next submission. Furthermore, the ERT recommends Albania to continue improving its inventory in order to include the missing emission estimates or to apply at least the appropriate notation keys consistently over the whole time series for the next submission, and to document the use of the notation keys in the IIR.

190. Albania does not present information on planned improvements in the IIR (2018). During the review week Albania sent its improvement plan to the ERT including several issues for the agriculture sector. The ERT recommends Albania to pursue its plans by implementing these improvements for the next submissions.

191. The ERT recommends that the Party updates the plan annually and includes it in the IIR in future submissions.

## Potential Technical Corrections

192. The ERT did not prepare any technical corrections for the agriculture sector.

## Sub-Sector Specific Recommendations

NOTE: The NFR codes included in this chapter correspond to the NFR codes of 2009 reporting format used by Albania in its current submission.

**Category issue 1: 4.B Manure management - $NH_3$, $NO_x$, NMVOC and PMs**

193. The ERT noted that the time series of the sector manure management (4B) is not consistent and partly not complete for some livestock categories for all required pollutants ($NH_3$, $NO_x$, NMVOC and PMs). There was no IIR submitted in 2019 and in the 2018 IIR no sufficient explanations could be found. During the review week Albania provided new emission estimates for manure management for all relevant livestock categories and all required pollutants by already using the new reporting format (NFR14) and additionally an improvement plan for the agriculture sector.

194. The new $NH_3$ emission estimates for manure management have been calculated using the tier 1 methodology according to the 2016 EMEP/EEA Guidebook. For all livestock categories solid systems are considered as the management system to be in place (100%). The calculation files include $NH_3$ emissions for grazing (to be reported under NFR14 3Da3), housing, storage and yards (to be reported under NFR14 3B) as well as land spreading of manures (to be reported under NFR14 3Da2a). The ERT recommends Albania to report these emissions in the next submission using the latest NFR format. Furthermore, the ERT recommends Albania to prepare the respective methodological chapter in the IIR containing information on the activity data and EFs used as well as information regarding agricultural practices in Albania.

195. The revised $NO_x$ emissions for manure management (4B) are calculated using the tier 1 approach according to the 2016 EMEP/EEA Guidebook. The ERT recommends Albania to report these emissions in the next submission using the latest NFR format. Furthermore, the ERT recommends the Party to prepare the respective

methodological chapter in the IIR containing information on the activity data and EFs used.

196.     The revised NMVOC emissions for manure management (4B) are calculated using the tier 1 approach according to the 2016 EMEP/EEA Guidebook. The default tier 1 EFs without silage feeding has been applied as there is no silage feeding in Albania for any of the livestock categories. The ERT recommends Albania to report these emissions in the next submission by using the latest NFR format. Furthermore, the ERT recommends the Party to prepare the respective methodology chapter in the IIR containing information on the activity data and EFs used as well as feeding assumptions regarding silage.

197.     The new PM emission estimates (TSP, $PM_{10}$ and $PM_{2.5}$) for manure management (4B) are calculated based on the tier 1 approach of the 2016 EMEP/EEA Guidebook. The ERT recommends that Albania to report these emissions in the next submission using the latest NFR format. Furthermore, the ERT recommends Albania to prepare the respective methodology chapter in the IIR containing information on the activity data and EFs used.

## Category issue 2: 4.D.1.a Synthetic fertilizer - $NH_3$ and $NO_x$

198.     The ERT noted a sharp reduction for the years 2016 and 2017 in the time series of $NH_3$ emissions from synthetic N-fertilizers (4D1a). In response to this question raised, Albania confirmed that there is a need for analysing the N amounts of fertilizer applied and the preparation of a consistent time series and to revise the emissions using the tier1 or a higher tier methodology from the Guidebook. The ERT recommends Albania to include the respective revised estimations in the next submission, and to prepare the respective methodological chapter in the IIR containing information on the activity data and EFs used as well as include a detailed explanation of the trend.

199.     The ERT noted that $NO_x$ emissions from synthetic N-fertilizers (4D1a) are not reported in the NFR tables although the 2016 EMEP/EEA Guidebook provides methodology and default EFs (table 3.1). Referring to Albania´s improvement plan, it is foreseen to analyse the N amounts of fertilizer applied and the preparation of a consistent time series. In a second step $NO_x$ emissions are planned to be estimated with tier 1 methodology. The ERT recommends Albania to include the respective recalculations in the next submission and to prepare the respective methodological chapter in the IIR containing information on the activity data and EFs used.

## Category issue 3: 4.D.2.c N-excretion on pasture range and paddock unspecified - $NH_3$ and $NO_x$

200.     $NH_3$ emissions from pasture, range and paddock (4D2c) are reported for years 2016 and 2017, however, for the previous years no emissions are reported. During the review the Party provided a revised estimate of $NH_3$ emissions of manure management calculated on basis of the tier 1 approach of the 2016 EMEP/EEA Guidebook for all relevant stages of manure (housing, storage and yards – manure spreading – grazing). The ERT recommends Albania to report the emissions from grazed animals (NFR14 3Da3) in its next submission in the latest NFR format.

201.     The 2016 EMEP/EEA Guidebook provides EFs for $NO_x$ emissions from N applied in fertiliser, manure and excreta (see Table 3.1) in order to calculate $NO_x$

emissions for source categories animal manure applied to soils (3Da2a) or urine and dung deposited by grazing animals (3Da3). As the tier 1 methodology does not distinguish between emissions from these both source categories, the emissions should be reported under 3Da2a if the livestock are in animal housing for most of the year or under 3Da3 if they are predominantly grazed. Albania did not report $NO_x$ emissions neither for grazing nor for manure spreading for all years which is not in line with the current version of the EMEP/EEA Guidebook. The ERT notes that Albania included this issue already in its improvement plan and recommends the Party to report the missing emission estimates in the next submission.

## Category issue 4: 4.D Agricultural soils

202.    Albania uses the former NFR09 format in the reporting instead of the latest NFR format. Therefore, the completeness of the emission estimates of the new NFR categories under agricultural soils (NFR14 3D) cannot be ensured as the NFR14 entails new emission sources for agricultural soils. During the review, the Party informed the ERT that it is planned to report the next submission in the NFR14 format. The ERT highly appreciates this plan and reiterates the recommendation from the previous review 2017 to estimate and report the emissions from all sources included in the new NFR codes in the appropriate NFR category in the next submission (3Da1 inorganic N-fertilizers, 3Da2a animal manure applied to soils, 3Da2b sewage sludge applied to soils, 3Da2c other organic fertilisers applied to soils (including compost), 3Da3 urine and dung deposited by grazing animals, 3Da4 crop residues applied to soils, 3Db indirect emissions from managed soils, 3Dc farm-level agricultural operations including storage, handling and transport of agricultural products, 3Dd off-farm storage, handling and transport of bulk agricultural products, 3De cultivated crops and 3Df use of pesticides).

## Category issue 5: 4.F Field burning of agricultural residues

203.    The ERT noted that emissions from field burning of agricultural wastes (4F) are reported as "NO" in the NFR tables between 2010 and 2015 and as "NE" in 2016 and 2017. No explanation is provided supporting the choice for these notation keys. This issue was already included in the last review report in 2017. During the review Albania informed the ERT on its plans to include emissions from this source category. The ERT recommends Albania to analyse and gather activity data and to report the required emissions according to the methodologies provided in the latest version of the EMEP/EEA Guidebook in the next submission. The ERT commends Albania for its plans on crosschecking the results with the information reported under UNFCCC and recommends the Party to prepare the respective methodological chapter in the IIR containing information on the activity data and EFs used as well as supporting information.

## Category issue 6: 11.B Forest fires and 11.C Other natural emissions

204.    Emissions from categories forest fires (11B) and other natural (11C) emission values are included in Annex I as memo items. The ERT noted that Albania reports emissions from these categories for the years 2016 and 2017, and that between 1990 and 2015 some years are reported as "NE". There is no complete and consistent time series available. During the review Albania informed the ERT that this issue is already included in its improvement plan, however, due to lack of data and resources, estimation from this sector was not the highest priority.

# WASTE

## Review Scope

| Pollutants Reviewed | SO$_2$, NOx, NMVOC, NH$_3$, PM$_{10}$ & PM$_{2.5}$ | | |
|---|---|---|---|
| Years | 1990 – 2017 + (Protocol Years) | | |
| **Code** | **Name** | **Reviewed** | **Not Reviewed** | **Recommendation Provided** |

| Code | Name | Reviewed | Not Reviewed | Recommendation Provided |
|---|---|---|---|---|
| 5A | Solid waste disposal on land | X | | X |
| 5B1 | Biological treatment of waste - Composting | X | | X |
| 5B2 | Biological treatment of waste - Anaerobic digestion at biogas facilities | | X | |
| 5C1a | Municipal waste incineration | X | | |
| 5C1bi | Industrial waste incineration | X | | |
| 5C1bii | Hazardous waste incineration | X | | |
| 5C1biii | Clinical waste incineration | X | | |
| 5C1biv | Sewage sludge incineration | | X | |
| 5C1bv | Cremation | X | | X |
| 5C1bvi | Other waste incineration | | X | |
| 5C2 | Open burning of waste | X | | X |
| 5D1 | Domestic wastewater handling | X | | |
| 5D2 | Industrial wastewater handling | X | | X |
| 5D3 | Other wastewater handling | | X | |
| 5E | Other waste | X | | X |
| Note: Where a sector has been partially reviewed (e.g. some of the NFR codes please indicate which have and which have not in the respective columns. | | | | |

## General recommendations on cross cutting issues

### Transparency

205.    The ERT notes that Albania did not submit an IIR in 2019. The ERT recommends Albania to provide a transparent IIR in the next submission, prepared according to the Reporting Guidelines' Annex II, including descriptions of methods, references to data sources, assumptions, trends and the rationale for choices of data and methods.

### Completeness

206.    During the review Albania provided the ERT emissions and activity data for NFR categories 5A, 5C and 5D in the NFR14 tables including category specific improvement plans. The ERT recommends Albania to complete all waste sector NFR tables by including emissions and activity data, and to implement the identified improvements to the next submission. The ERT also recommends Albania to include information on emissions from sources that are now marked as "not estimated" (NE) for NFR categories 5B, 5C and 5D in the IIR of the next submission and to estimate and report the missing emissions.

### Consistency, including recalculation and time series

207.    The ERT recommends Albania to proceed with the further analysis and preparation of a consistent time series (1990-2017) for the waste categories as identified in the waste improvement plans.

208.    The ERT recommends Albania to improve the consistency of activity data between the UNFCCC greenhouse gas inventories and the UNECE LRTAP reporting. The ERT notes that Albania's National Communication submissions are publicly available on the UNFCCC website.

## Comparability

209.    The ERT notes that Albania is using tier 1 methodology and default emission factors from the 2016 EMEP/EEA Guidebook for emissions in NFR categories 5A, 5C and 5D and recommends Albania to use tier 2 or higher methods for all possible key categories.

## Accuracy and uncertainties

210.    The ERT commends Albania for the uncertainty analysis provided for NFR 5A and recommends the Party to undertake an uncertainty analysis also for NFRs 5C and 5D in order to provide an indication of the reliability of the inventory data and to indicate the prioritization of improvements in the inventory.

211.    The ERT recommends the Party to implement sector specific OA/QC procedures for the waste sector, and to describe the QA/QC procedures carried out and their results in the IIR of the next submission.

## Condensable Particulate Matter

212.    Albania did not provide explanatory information on the condensable component of PM emission. The ERT recommends Albania to provide this information in the IIR of the next submission.

## Improvement

213.    The ERT notes the improvement plan including priority evaluation and schedule submitted during the review and recommends Albania to include this in the IIR of the next submission.

## Potential Technical Corrections

214.    The ERT did not prepare any technical corrections for the waste sector inventory of Albania.

## Sub-Sector Specific Recommendations

### Category issue 1: 5.A Solid waste disposal on land - NMVOC, TSP, $PM_{10}$, $PM_{2.5}$

215.    During the review Albania provided a tier 1 calculation sheet for the NFR category 5A. The ERT noted that the calculation sheet was done under a time pressure and some of the labelling and renaming was not completed. The ERT recommends Party to complete the excel sheet as part of the QC process and to include the new estimates in the next submission and the documentation of the calculations in the IIR.

216.    The ERT recommends Albania to prepare for NFR 5A a consistent and complete time series with analysis of managed and unmanaged (illegal) landfilling in the

country considering urban and rural situation as identified in the improvement plan, and to document the activity related features in the country in the IIR.

## Category issue 2: 5.B.1 Composting - NH₃

217.     The ERT noted that Albania has targets for composting in the 'National Plan and National Strategy on Waste Management', but that instant has no composting data available. The ERT reiterates the recommendation from the previous review that Albania looks for possible data sources for composting activity data for the next submission.

## Category issue 3: 5.C.1.b.v Cremation - All pollutants

218.     The ERT noted that under this sector, besides emissions of the cremation of human remains reported as "NO", also the emissions of incineration of animal carcasses and animal by products (ABPs) should be reported. The ERT reiterates the previous review recommendation for the Party to collect activity data and to calculate emissions from this source using the Guidebook methods and to report and document on the emissions in the next submission. In case the activities do not occur in the country, this should be clearly documented in the IIR.

## Category issue 4: 5.C.1.b.iii Clinical incineration - All pollutants

219.     The ERT noted a decreasing trend from 80kt in 2013 to 20kt by 2017 and an increasing trend in the energy recovery for the same time period. The ERT recommends the Party to describe the drivers behind the trends in the next IIR.

## Category issue 5: 5.C.2 Open burning of waste - All pollutants

220.     The ERT noted that Albanian media and EEA studies report open burning of waste to be a common practise in the country. The ERT recommends for the next submission the Party to look for or create a data sources for the emission category and to report emissions and include documentation of the activity and calculation of emissions in the IIR.

## Category issue 6: 5.D Wastewater treatment - NMVOC

221.     The ERT notes that EUROSTAT reports 16 % of the population being connected to the waste system, leaving a maximum of 84% relying on the use of latrines, septic tanks or others. The ERT reiterates the recommendation from the previous review for the Party to collect data on waste water treatment and on the number of inhabitants that are not connected to waste water treatment plants and have to make use of latrines and cesspits, and to calculate the emissions coming from this source using the tier 1 methodology of the Guidebook and to report on this in the next submission.

222.     The ERT commends the Party for providing time series for domestic water treatment, however, notes that the industrial water treatment emissions are missing. The ERT recommends the Party to prepare consistent time series (1990-2017) for emissions from industrial wastewaters, and recommends to further analyse the domestic waste water treatment as indicated in the improvement plan to the next submission.

**Category issue 7: 5.E Other waste - All pollutants**

223.    The ERT notes that the Party does not report emissions from accidental house, industry and car fires. The ERT reiterates the previous review recommendation for the Party to collect data, and to estimate and report emissions from these sources according to the Guidebook methodology to the next submission.

## INFORMATION SUBMITTED BY THE PARTY IN 2019

| Filename | Short description of content |
|---|---|
| Albania_Inventory_VI_1990-2017_14.02.2019.xls | Annex I, **MS Excel file** , years 1990 - 2017 |
| No IIR submitted in 2019<br><br>*2018 submission used instead:*<br>*Informative_Inventory_Report_2009-2016_final_MF_20.04.18.pdf* | *IIR 2018, pdf-document; 59 pg* |

## LIST OF ADDITIONAL MATERIALS PROVIDED BY THE COUNTRY DURING THE REVIEW

1. Response to preliminary questions raised prior to the review: Albania q1 responses.doc

2. Albania Stage 2 S&A report

3. Albania Stage 1 report 2017

4. Improvement Plan 1.7.2019

5. Energy Sector calculation tools

6. 5.A calculation sheet: ALB_InventoryTool-Waste-4.A-Landfill

7. 5.C calculation sheet: ALB_InventoryTool-Waste-5.C.1.b.iii-IncinClinicalWaste

8. 5.D calculation sheet: ALB_InventoryTool-Waste-5.D_WasteWater

9. Waste improvement plan: Albania_InventoryImprovementPlan_Waste

10. Annex 1 emissions for Waste: Annex_I_Emissions_reporting_Albania_waste

11. http://www.instat.gov.al/media/4759/urban-solid-waste-statistics-2017.pdf

12. EEA: Albania Municipal waste factsheet 2018.pdf