Annex 2

Romania's answers sent on 9 February 2011 Regarding Potential Problems and Further Questions from the additional questions of ERT, sent on 26 January 2011 (CR_ROU_2010_CommentsERT_adjusment_gases_260111) and formulated in the course of the 2010 review of the greenhouse gas inventories of Romania submitted in 2010

Note: the additional answers, sent on 9 February 2011, are marked out with plum color.

Potential problems with non-inventory elements of the annual submission under the Kyoto Protocol

With reference to the Guidelines for review under Article 8 of the Kyoto Protocol the ERT requests that additional information corresponding to the potential problems identified in this paper be forwarded to the ERT, through the UNFCCC secretariat, not later than by 6 November 2010.

National System

Potential problem: *In relation to 19/CMP.1 - Guidelines for National Systems*

In accordance to the annex of Decision 19/CMP.1, paragraph 14 (b) and (c), each Party included in annex I **shall, as** part of its inventory preparation:

"Prepare estimates in accordance with the methods described in the Revised 1996 IPCC guidelines for national GHG Inventories, as elaborated by the IPCC good practice guidance, and ensure that appropriate methods are used to estimate emissions from key source categories;"(paragraph 14.b)

"Collect sufficient activity data, process information and emission factors as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;" (paragraph 14.c)

The ERT noted that a large number of categories in all sectors of Romania's inventory are not estimated. It further noted that all estimates in the Energy, Agriculture and Waste sector are prepared using Tier 1 methods and default emission factors, although several of them are key categories. The ERT therefore concluded that Romania's inventory system fails to conduct the activities required for inventory preparation, as described in Decision 19/CMP.1, paragraphs 14.b and 14.c

Potential problem: *In relation to 15/CMP.1 - Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol*

In accordance to paragraphs 5 and 6 of the annex of Decision 15/CMP.1, each party included in Annex I **shall** include the following information, as part of its its annual greenhouse gas inventory:

"… information on anthropogenic greenhouse gas emissions by sources and removals by sinks from land use, land-use change and forestry activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, in accordance with Article 5, paragraph 2, as elaborated by any good practice guidance in accordance with relevant decisions of the COP/MOP on land use, land-use change and forestry." (paragraph 5)

" .. information on how inventory methodologies have been applied taking into account any IPCC good practice guidance on land use, land-use change and forestry agreed by the COP and recognizing the principles as laid out in decision 16/CMP.1 (paragraph 6a.)

" ...information on which, if any, of the following pools – above-ground biomass, belowground biomass, litter, dead wood and/or soil organic carbon – were not accounted for, together with verifiable information that demonstrates that these unaccounted pools were not a net source of anthropogenic greenhouse gas emissions;" (paragraph 6e)

Romania has elected Forest Management under Article 3.4 of the Kyoto Protocol. Forest Management is a large category which offsets 28% of total national emissions. It is also a key category both under the Convention and the Kyoto Protocol. Romania applies a Tier 1 methodology to estimate emissions and removals from Forest Management; carbon stock changes in the litter and dead wood pools are not estimated, and the NIR does not provide transparent and verifiable information that these pools do not constitute sources.

The ERT concluded that the method used to estimate emissions and removals for Forest Management is not appropriate to national circumstances and does not comply with good practice. It further concluded that the available activity data, process information and emission factors were insufficient to support the preparation of Forest Management estimates (several pools are not reported). Finally, the ERT found that the information required in accordance with paragraph 6(e) above to demonstrate that carbon pools are not net sources is missing.

Therefore, the ERT believes that Romania's national system is not performing the specific function of inventory preparation required to comply with the *Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol*.

Specific recommendations by the ERT:

The ERT strongly recommends that Romania take immediate remedial action to improve its national system and ensure that:

- Emissions are estimated for those categories in which they are known to occur in the country and for which estimation methodologies are available in the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories and the IPCC good practice guidance;
- Appropriate methods are used to estimate emissions and removals, especially for key categories;
- Activity data, process information and emission factors are collected or developed to adequately support the estimation methods selected;
- Reporting requirements under Article 7.1 of the Kyoto Protocol are met.

The ERT further asks Romania by 6 November 2010 to:

- Document in writing the required changes to the national system that will allow it to fulfill its 'Inventory Preparation' function as described in paragraphs 14.b and 14.c of Decision 19/CMP.1; provide an implementation

schedule for such changes; and describe how it will maintain an effective, properly functioning national system.

Response/Information by Party:

1) Document in writing the required changes to the national system that will allow it to fulfill its 'Inventory Preparation' function as described in paragraphs 14.b and 14.c of Decision 19/CMP.1

In accordance with the Governmental Decision no. 1570/December 2007 for establishing the National System for the estimation of anthropogenic greenhouse gas emissions levels by sources and CO_2 removals by sinks, in order to fulfil the relevant provisions in paragraphs 14.b and 14.c of Decision 19/CMP.1 Romania will develop and/or collect the relevant data/information as are necessary to prepare all estimates of the occurring emissions/removals, considering the provisions in the Revised 1996 IPCC guidelines for national GHG Inventories, in the IPCC good practice guidance and/or in the IPCC good practice guidance on land use, land-use change and forestry, by implementing the studies mentioned in the Table below on a contractual base, by specialized third party organisations; additionally, the study on LULUCF under the Kyoto Protocol aims also at the preparation of the emissions/removals estimates.

Table Studies which will be developed by Romania in order to fulfill its 'Inventory Preparation' function as described in paragraphs 14.b and 14.c of Decision 19/CMP.1

The written confirmation that the studies in the Table above have been approved by the designated national authority, the Ministry of Environment and Forests, is attached to the present document (in the form of the Note on the measures proposed to address the issues raised following the revision of INEGES 2010).

The organization having the responsibility of implementing the acquisition procedure pertaining to the studies previously mentioned, including the contracting stage is the Ministry of Environment and Forests (MEF).

In respect to the provisions in the current Improvement Plan, the studies are meant to improve the accuracy of the GHG Inventory through the use of higher Tier methods according to the specific IPCC good practice guidance decision trees provisions, to improve its completeness by allowing for the estimation of all relevant emissions/removals and to improve the consistency of the data series.

The authority responsible for ensuring that the studies will provide data and information compliant with reporting requirements is the National Environmental Protection Agency (NEPA), the competent authority in the GHG Inventory preparation.

No.	Title of the study	Envisaged improvement	Deadline
1.	The calculation and the documentation of the national emission factors specific to every fuel type, raw material, industrial production, for every subsector within the Energy and Industrial Processes Sectors, data necessary for the preparation of the GHG Inventory and for the implementation of the scheme for GHG emission allowance trading at the European Community level (EU-ETS), of the national net calorific values for every EU-ETS subsector and of the associated uncertainties; the calculation and the documentation of the conversion factors specific to the technologies utilized within the energy and industrial processes and of their associated uncertainties.	providing accuracy through higher tier methods use	2011
2.	The development of the historical data, data adjacent to the 1989-2003 period, data which allow for the estimation of the road transport emissions utilizing the COPERT model.	providing completeness	2012
3.	The calculation and the documentation of the emission factors, of other national parameters and of the associated uncertainties, elements relevant to the key categories within the Agriculture Sector.	providing transparency through a well documented NIR	2011
4.	The calculation and the documentation of the emission factors, of other national parameters and of the associated uncertainties, elements necessary for the calculation of the CH_4 emissions from Solid Waste Disposal on Land category.	proper use of notation keys	2012
5.	The calculation and the documentation of the emission factors, of other national parameters and of the associated uncertainties, elements necessary for the calculation of the CH_4 and N_2O emissions from Waste Water Handling category.	lack of NE use within the GHG Inventory	2012
6.	The elaboration of the GHG Inventory LULUCF Sector both under the UNFCCC and KP requirements	proper use of notation keys	2011

The quality management process will be assured as follows:

- during the acquisition procedure, through the involvement of the relevant people in NEPA/third party organizations aiming to properly elaborate the technical requirements;
- during the implementation of the study, through maintaining a continuous dialogue between the contractor and NEPA/MEF aiming to properly developing the study in respect to the technical and timeliness requirements;
- after the results are generated, through the involvement of relevant third party organizations developing/documenting Quality Assurance activities.

During the acquisition procedure the contractor will be required to provide to NEPA, after the generation of the results, the proper documentation on the scope, methods, assumptions, key parameter values and data sources; further, NEPA will ensure the proper use, archive and storage of these data/information.

The agency responsible for the implementation of study findings/results is NEPA, through their incorporation within the GHG Inventory.

After the studies completion, depending on the availability of data, NEPA/third party organizations contracted will ensure the on-going data collection.

2) Provide an implementation schedule for such changes

The schedule for the implementation of the studies referred to at point 1) is provided in the Table above.

The deadlines for the provision of the results generated incorporate a detailed schedule of the implementation of the studies, as follows:

- a starting point in respect to the studies public acquisition which is January-February 2011; in the case of the study relevant to the LULUCF under the UNFCCC and the Kyoto Protocol, the beginning before the current moment of the public acquisition procedure. The study has been recently lunched in the electronic acquisition procedure.

- the period needed for the public acquisition which is to respect the Romanian relevant legislation; the estimated period accounts for approximately 3 months;
- the period dedicated to the study implementation, including the final reception: the rest of the period.

Additionally, the results of the studies are to be considered as part of the GHG Inventory to be submitted in the year after the studies finalization.

3) Describe how it will maintain an effective, properly functioning national system

An effective, properly functioning national system will be maintained by:

- allocating sufficient funds for the implementation of the studies in Table above

Two national funding sources are currently in place:

- according to the Law no. 167/July 2010 on the approval of the Governmental Emergency Ordinance no. 15/2010 for the modifying the Article 13.2 from the Governmental Emergency Ordinance no. 196/2005 on the Fund for the environment, the Fund for the Environment is utilized also for implementing studies/research within the environmental protection and forests fields aiming at fulfilling the international assumed obligations

Note: The Fund for the environment is a public economic-financial instrument developed to sustain and implement environmental protection projects, according to the legal provisions in place.

The Fund for the environment is administered by the Fund for the Environment Administration, a public institution with judicial personality, entirely financed by own income, under the coordination of the Ministry of Environment and Forests.

- the revenues from selling of the surplus of the assigned amount under the International Emission Trading mechanism defined through the Kyoto Protocol: according to the Governmental Decision no. 432/2010 on the establishment and development of the green investment schemes (completed by the Governmental Emergency Ordinance no. 29/2010 on the valorification of the assign amount surplus assigned to Romania through the Kyoto Protocol), 2% from the funds resulted from the commercialization of the assign amount surplus are to be utilized for informational and awareness campaigns as well as for implementing research studies within the climate change field

Note: A first round of negotiation for selling assigned amounts units is currently under development.

- the budget of MEF, following the approval by the Minister of the Environment of the Note on the measures proposed to address the issues raised following the revision of INEGES 2010 (attached).

- maintaining, at the National Environmental Protection Agency level, the single national entity, the team assigned with the National System administration and with the management/preparation of the GHG Inventory.

In respect to the availability of funds for developing the studies presented in the Table above,

- all the studies can be funded at the current moment using the funds available at the Fund for the Environment Administration level;
- the revenues from selling of the surplus of the assigned amount under the International Emission Trading mechanism defined through the Kyoto Protocol are expected to become available by the end of 2010;
- the relevant funds part of the MEF's budget will become available at the beginning of 2011.

As part of its 2011 and 2012 GHG Inventory submissions, Romania will present in the NIR, the following elements on the implementation of the studies in the Table above, for each study:

- a summary of the information provided below:
    - written confirmation that the study has been approved by the designated national authority;
    - identification of the contracting agency;
    - detailed schedule;
    - where the study fit within the more general Inventory improvement plan;
    - the authority responsible for ensuring that the study will provide data and information compliant with reporting requirements;
    - the quality management process (from the initiation, throughout the studies themselves, and the quality assurance of the findings);
    - how it will ensure that proper documentation is available on the scope, methods, assumptions, key parameter values and data sources;
    - the agency responsible for the implementation of study findings;

- the process for the on-going collection of currently missing data.

- a detailed update on the status, including phases that have been completed and any delays from the schedule requested above;
- any change in the scope, methods, or process.

Response by the ERT:

The ERT appreciates that the planned studies will fill some reporting gaps. However Romania's response does not indicate any specific change in the national system in order to ensure its proper functioning. The ERT notes that the following information is missing:

- - the authority responsible for ensuring that the studies will provide data and information compliant with reporting requirements;
- - the authority responsible for the quality management process (from the initiation, throughout the studies themselves, and the quality assurance of the findings);
- - where will proper documentation be available on the scope, methods, assumptions, key parameter values and data sources for each study;
- - the agency responsible for the implementation of study findings;
- - the process for the on-going collection and quality control of currently missing data

With respect to the available funding, the following information is also missing:

- - confirmation that funds are available now for all the studies listed in the table above, or if not when they are expected to become available (preferably in the very near future);
- - indication of the relative contribution of the Swiss framework to the funding of the LULUCF study;
- -indication of how the funding will be used to strengthen the national system, especially to set up stable and effective institutional arrangements

In addition, as reported by Romania, it seems that the Romanian inventory would benefit from the results of the planned studies only one year after their completion which means 2013 submission for most of the categories, perhaps the 2012 submission for the LULUCF sector.

If this is the case, these improvements will not be reviewed until the end of the Kyoto Commitment period, which the ERT considers a high risk given Romania's current issues with its national system. The ERT also considers that Romania should provide in each of the 2011 and 2012 NIR:

- - A status report for each study, including starting date, identification of the contracting agency, a detailed schedule including phases that have been completed so far, and any delays from the schedule requested above;
- - Any change in the scope, methods, or process of any of the studies.

Inventory related potential problems

With reference to the Guidelines for review under Article 8 of the Kyoto Protocol, the ERT requests that additional information and/or revised estimates for the 2008 greenhouse gas (GHG) inventory corresponding to the potential problems identified in this paper (see attached tables) be forwarded to the ERT, through the UNFCCC secretariat, not later than by 6 November 2010.

Should Romania decide to submit by 6 November 2010, in response to some or all potential problems, revised estimates of its GHG emissions, the ERT requests that the revised estimates contain the following:

- Relevant background information and a descriptive summary of the revisions made by Romania in its 2010 inventory submission, in particular in the year 2008 with respect to: CO2 and CH4 emissions from fugitive emissions from Oil, Natural Gas and Other Sources (1B2); CO2, CH4 and N2O emissions from Public electricity and heat production (1A1a), transport (1.A.3), commercial/institutional, and other sectors; CH4 emissions from energy industries and Manufacturing industry and construction; CO2 emissions from calcium and silicon carbide production; PFC emissions from refrigeration and air conditioning equipment; SF6 from others (2.F.9); CH4 from enteric fermentation and manure management; N2O direct emissions from agricultural soils (nitrogen fixing plants and crop residues, and cultivation of histosols;

Response/Information by Party:

Background information:
The background information of the revisions made by Romania in its 2010 inventory submission are presented within the sectoral responses.

Descriptive summary:
Descriptive summary of the revisions made by Romania in its 2010 inventory submission are presented in the following tables:

No.	Category and gas	Short description of the revision	Year/period affected by revision
Agriculture Sector			
1.	Enteric fermentation – CH_4 (4.A3, 4.A8)	Default values of the emission factors for developing countries have been replaced with default values for developed countries.	2008
2.	Manure management – CH_4 (4.B(a)3, 4.B(a)4, 4.B(a)6, 4.B(a)7 and 4.B(a)9)	Default values of the emission factors for developing countries have been replaced with default values for developed countries.	2008
3.	Direct soil emissions – N-fixing crops- N_2O (4D.1.3), Direct soil emissions-Crop residue- N_2O (4D.1.4)	Lucerne and clover have been characterized in both analyzed categories as N-fixing crop; for both subcategories, the default value $Frac_{NCRBF}$ used in the emissions calculation is 0.03 kg N/kg of dry biomass.	1989-2008
4.	Direct soil emission-Cultivation of histosols- N_2O (4D.1.5)	Emissions began to be characterized based on new data on the area of cultivated histosols and on the default emission factor value.	2008
Industrial Processes Sector			

5.	Carbide Production: Calcium carbide – CO_2 (2.B.4.2)	The *changes in notation keys* related with calcium carbide production sector in 2007 and 2008 within CRF data base were made	2007 and 2008
6.	Carbide Production: Silicon carbide – CO_2 and CH_4 (2.B.4.1)	The *estimate of CH_4 emissions* related with silicon carbide production in 2008 within the CRF data base was made. The *change in notation keys* related with CO_2 emissions in 2008 was also made within CRF data base.	2008
Energy Sector			
7.	Energy, Public electricity and heat production, 1A1a (CO_2, CH_4, N_2O)	A correction was made in 1A1a the CRF tables.	2008
8.	Energy, Energy industries and Manufacturing industry and construction, 1A1 & 1A2 (CH_4)	In the spreadsheet was a mistake of applying the formula for calculating the emission of CH_4 (the formula was included in a row below the row with the consumption of biomass calculation). It was corrected in the CRF tables.	1989-2008
9	Energy, transport, 1A3 .(CO_2, CH_4, N_2O).	• The response received from the NIS registered Solid Fuel consumption in the EB for Railways, were included in the CRF tables at 1AA3C. Biomass consumption we have introduced in a new section attached to the OTHER Fuels. The system does not allow attaching a new combustion at the Railways node.	1989-2008
10.	Energy, Other sectors, Commercial/Institutional, 1A4a (CO_2, CH_4, N_2O).	We introduced the CRF tables - 1AA1A - REFINERY GAS consumption values for the EB - OTHER BRANCHES OF ECONOMY.	1989-2008

No.	**KP-LULUCF table**	**Short description of the estimation revision**	**Year/period affected by revision**
KP-LULUCF tables			
1.	NIR 1	Notation key R instead of NR for change in carbon soil for AR	2008
2.	NIR 2	Changes to area from AR to AR in land transition matrix triggered changes to of area from "Other" to "Other"	2008
3.	5(KP-I) A.1.1.	Changes to area, carbon stock change in AGB, litter and mineral soil, the latter replacing the former NE notation key	2008
4.	Accounting table	Change of input data for AR activity, consequent to changes made in table 5(KP-I) A.1.1.	Accounting in 2014/2012
No.	**Section in Chapter 11 NIR 2010**	**Short description of the estimation revision**	**Year/period affected by revision**

KP-LULUCF tables			
1.	11.2.1	Revision of activity data (area) corresponding to the AR activity	2008
2.	11.3.1.1	Estimation of carbon stock change in soil organic carbon, on lands affected by AR activity	2008

- A complete resubmission of the 2010 CRF tables, reflecting the revised estimates;

Response/Information by Party:

The CRF tables and the related database have been loaded to the UNFCCC Secretariat database using the submission portal.

- Party's revision of the calculation of the commitment period reserve, based on the recalculated emissions reported for 2008, if the calculation of the commitment period reserve is based on the inventory and not the assigned amount.

Response/Information by Party:

Calculation of the commitment period reserve (CPR)

According to the relevant provisions in Decisions 11/CMP. 1 and 13/CMP. 1, Romania calculated the Commitment Period Reserve (CPR) based on the emissions level of 2008 excluding Land Use, Land Use Change and Forestry, as follows:

CPR (tones CO_2 equivalent) = 5 * GHG emissions level in 2008 (tones CO_2 equivalent)

CPR = 5 * 152,934,148.09 = 764,670,740 tones CO_2 equivalent

Activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Afforestation/reforestation - assessment of units of land

Potential problem/question:

Romania states in the NIR (page 289) that smaller area units than the threshold of the national definition of forest have also been considered, provided that they have a minimum width of 20 m. But the definition of forest (included in Decision 16/CMP.1 (Annex, paragraph 1(a)) says that forests areas have to fulfil the requirement of being equal or above the minimum area. Minimum width is and additional attribute that Parties may adopt, but it is not part of the definition of forest under the Kyoto Protocol. In summary, the A/R areas were not identified in a way consistent with Decision 15 /CMP.1, and areas that do not fulfil the definition have been included. This issue could lead to the overestimation of removals in 2008, because AD used for calculation is to a certain extent bigger than it should.

Recommendation by the ERT:

The ERT recommends that (i) Romania remove from afforested/reforested land all those areas that are below the threshold for minimum size of 0.25 hectare selected by Romania in its definition of forest; (ii) ensure that all areas of afforested/reforested land meet this definition; and (iii) re-estimate the total area under afforestation/reforestation and submit the corresponding new KP tables with recalculated data for area and emissions/removals (Tables NIR2, and 5(KP), 5(KP-1)A.1.1and 5(KP-1)A1.2.).

RO answer:

The rationale for the initial consideration, on an exceptional basis, of land units below the minimum defined-forest area of 0.25 ha, under AR activity, and for estimating associated emissions/removals, was that they are forest-contiguous parcels, usually originating from plantations on non-forest land, as compensatory measure (among the several provisioned by law) for Deforestation approvals.

Nevertheless, following the ERT recommendation, all parcels under 0.25 ha included initially under AR activity have been removed, the emissions/removals have been estimated on this new basis, and the corresponding KP-LULUCF tables have been revised accordingly. This revision exercise led to a decrease of AR area from 28,187 to 28,163 ha (0.08%), and of the associated removal estimates from 178.93 to 178.77 Gg CO_2 eq (0.09%).

Afforestation/reforestation - pools not estimated

Potential problem/question:

Romania did not estimate carbon stock changes in soil organic carbon and it did not provide information that demonstrates that this unaccounted pool was not a source in 2008.

Recommendation by the ERT:

Romania should document that the excluded pool is not a source or, alternatively, carry on its estimation for 2008, according to the IPCC GPG LULUCF, Chapter 3, Section 3.2.3. As land converted to forest land is not a key category, use of Tier 1 could be considered as possible.

RO answer:

Following the ERT recommendation, emission/removals from the soil pool in AR activity areas have been estimated, using an IPCC Tier 1 methodology (Eq. 3.2.32 GPG LULUCF). This exercise resulted in a net change of C stock in mineral soil (organic soil – not occurring) of +93.03 Gg CO_2 eq, representing an increase of ca. 50% of the initial removals for the AR activity.

Forest Management - methodology

Potential problem/question:
Romania does not estimate carbon stock changes in Litter and Dead Wood ("NE" notation keys are included in Table 5(KP-I)B.1). The justification provided in page 298 of the NIR is that substantive changes are not expected in the CSC for these pools, and mentions are made to IPCC Guidelines 1996. The ERT considers that the justification for excluding these pools is not in line with IPCC GPG LULUCF.

All the area of forest land remaining forest land in the Romania Inventory is considered managed and has been selected under Article 3.4 . This subcategory is a Key Category so the use of Tier 1, which assumes no carbon stock changes occur in non-biomass pools, is not recommended (see the decision tree in Figure 3.1.1, Chapter 3.1 of the IPCC GPG for LULUCF). The Party states in the NIR (page 298) that it will estimate these pools in future submissions.

The problem identified by the ERT is that the exclusion of these carbon pools is not justified in a transparent and verifiable manner and it could lead to an underestimation of emissions.

Recommendation by the ERT:
The ERT requests Romania to estimate Litter and Dead Wood for Forest Management and submit a anew Table 5(KP-I)B.1. Estimation should follow the appropriate Tier level choice according to the IPCC GPG LULUCF (Chapter 3.1, Figure 3.1.1).

RO answer:

The only figure for C stock in DOM pools (litter and dead wood) available for Romania is 6.755 Mt/ha referenced in the August submission. The last completed NFI dates back in 1984. The ongoing NFI is to be completed in 2011. An estimation of emission/removals from DOM pool for the FM activity, within the framework of a Tier 2-3 approach and based on a stock-change method will be possible upon the availability of final data from the ongoing NFI, in the 2012 submissions.

Forest Management - consistent representation of land areas

Potential problem/question:

Representation of land use is not done in a way consistent with IPCC GPG LULUCF (Chapter 2: Basis for consistent representation of land areas). The methods used by Romania, combining statistical information with expert judgement to develop land use matrices, are not transparent enough and could lead to an overestimation of removals. Land representation should follow Decision 15/CMP.1, in particular paragraph 6 of its Annex and relevant IPCC GPG LULUCF Chapter 2.

The ERT notes that observed problems with data collection on land use and land use change reflect problems in the ability of the Party's National System to provide the necessary information for the inventory in the LULUCF sector.

Recommendation by the ERT:

The ERT requests the Party to submit more information describing the sources of expert judgment and a plan to implement land representation in a consistent and transparent manner.

RO answer:

The reference in page 289 (section 11.1.4), also contained in page 229 of August submission, to the "expert judgement", was meant to explain the origin of discrepancies on data on land use change between the reporting under the Convention and the reporting under KP. The origin of these discrepancies is as follows:

- In the yearly reporting under the Convention, data on land distribution by use categories were taken from the Statistical Yearbook (NIS), which used its own definitions and methods of collecting data, consistent with the sectoral (forestry) statistics, made by the forest administration. This reporting was based on "land use" definition, which means all lands that are mapped and managed as forests. These areas are reported under official reporting system (in SILV 1) by NIS. SILV reports are produced annually, at the end of year and the legal responsibility of filling up and aggregation them is well defined for all range of institutions and entities involved. AR data consistent with KP definition is nevertheless provided by another part of sectoral statistics (SILV 4), also managed by NIS. SILV 4 is very detailed on the information of afforestation on non-forest land achieved in that particular year (including species planted and number of seedlings used). These data are available since the 1980's. Except for afforestation/reforestation, due to the lack of data on land use changes between land use categories, expert judgment has been used to complete the land use change matrix.
- In the 2010/2008 reporting of the LULUCF sector under KP, the definition of ARD activities was consistent with Decision 16/CMP1 (afforestation – land that did not contain forest in the last 50 years, converted to forests from 1990-2008; reforestation – similar with afforestation, except that the land could have been forested before 31 december 1989, deforestation – conversion of forest land to non-forest land). As mentioned in section 11.2.3, data on ARD activities were obtained from official documents approving the change of land use category. This definition was not the same with the definitions used in the reporting under the Convention and SILV1, but had to be used in chapter 11 of NIR in accordance with the KP rules, as provided by the sectoral statistics (SILV4). The areas reported as ARD activities were, therefore, lower than data on land conversion reported under the Convention.

As already acknowledged in section 11.1.4, there is stringent need to harmonize data on land use change between the reporting under the Convention and that under KP, and revise the land use change matrix, on the basis of data on legal change of land use categories, employed in the KP reporting. This represents a top priority for the Romanian 2011 and 2012 submissions on the GHG Inventory.

Forest Management - methodology

Potential problem/question:

Estimation of carbon stock changes in living biomass in forest land remaining forest land is done using partially default values from the IPCC. This key subcategory offsets a very important proportion of the total emissions of Romania. To be in line with IPCC GPG, the Party should fully apply Tier 2/3 level methods. Otherwise overestimations of removals are possible.

Recommendation by the ERT:

The ERT requests the party to submit detailed information on its planned improvements to report Forest Management carbon stock changes using a Tier 2 (or 3) level.

RO answer:

The Romanian Ministry of Environment and Forest has ensured financing for the ongoing NFI, which is to be completed by the end of 2011. Compared to the last completed forest inventory in 1984, which relied on the aggregation of forest data from forest management plans, the ongoing NFI is based on the measurement, in plots distributed over a dense network throughout the country, of a large number of forest and forest-related parameters, which may enable the comprehensive estimation, at a Tier 2 / Tier 3 level, of emissions/removals from all pools.

The results of the NFI and other relevant LULUCF studies (presented within the response to the potential problems associated with the National System) will be incorporated in the GHG Inventory submissions beginning with 2012.

ATTACHMENT A

Overview of inventory potential problems identified for 2008

Annex A sources

2010 GHG inventory review

Romania

Abbreviations:
GPG: IPCC good practice guidance
AD: activity data, EF: emission factor, IEF: implied emission factor
KC: key category, ERT: Expert Review Team

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Fugitive Emissions from Oil, Natural Gas and Other Sources, 1B2	CO_2, CH_4	**Non-KC**	**X**		

Description of problem identified:

The ERT notes that Romania does not estimates ('NE') CO_2 and CH_4 emissions from venting in oil production (1B2c i), CO_2 emission from natural gas production, processing and transmission (1B2b ii & 1B2b iii) and CO_2 emission from production and transport of oil (1B2a ii & 1B2a iii). The ERT notes that methodologies are available in the IPCC good practice guidance.

Recommendation by ERT:

The ERT requests that Romania:

- *Verify that the above referred emissions are not already included under any other category in the inventory. If already included, the ERT recommends that Romania change notation key to included elsewhere ('IE') and provide information by 6 November explaining that it is included elsewhere.*
- *Otherwise, Romania should estimate emissions of CO_2 and CH_4 from venting in oil production (1B2c i), CO_2 emission from natural gas production, processing and transmission (1B2b ii & 1B2b iii) and CO_2 emission from production and transport of oil (1B2a ii & 1B2a iii) using the available methodology and default emission factors provided in the IPCC good practice guidance, and include the emission estimates and information in CRF table Table1.B.2.*

Response / Information by Party:

In 1B2c - Flaring and Venting - CH_4 emissions are calculated.

To CO_2 emissions :

- In 1B2 a – Explorare – according to IPCC Guideines for National Greenhouse Gas Inventories (Workbook) page 1.29 " Exploration and drilling = A category of exploration and drilling is included on the worksheet. However, no sources of activity data or default emissions are provided. Il you have locally available data for these values , enter this. If you are working from default sources you should ignore this category witch is only expected to be a small component of emissions."
- For production, processing and distribution, according to Good Practice Guidelines /2000 - Emission Factors for Fugitive Emissions from Oil and Gas Operations Date based on North America. We didn't used these data because at 2.84 p. writes: "The new Factors Derived from detailed emission inventory has results for Canada and United States, and is presented as examples. Notwithstanding this, tissue values Regions May Be Applied to practice outside of North America That Levels of Emissions Control similar comparability and feature types and quality of EQUIPMENT. "Romania can not be compared with Canada or the United States. As activity data and technology can be compared with Russia.
- To check if the EF for North America may be used for Romania, we made a comparative calculation for CH_4: at 2.86 pg / IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories of Gas Production - Fugitives have FE = 2.6E -03 to 2.9E-03 Gg per 10^6 and we chose the average value of 2.75 x 10^{-3} Gg $CH_4/10^6$ m^3;

$2.75 \times 10^{-3} \times 10^{-3} / 0.0298 \times 106\ m^3 \times 106/10^{-6} GJ = 2.75 \times 0.0298 \times 10^6$ Gg CH_4 = 81863.86 kg CH_4/PJ

- CH_4/PJ → **81863.86 kg CH_4/PJ < 288000 kg** CH_4/PJ (value from table 1-57/IPCC Guidelines - Reference Manual 1996, page 1119).

Potential problem unsolved? Rationale:

The ERT notes that table 1-58 of IPCC 1996 Guidelines provide CH4 EF for eastern Europe to estimate emissions from flaring and venting. The ERT considers that the inventory identifies this category as a potential case for adjustments.

Response / Information by Party:

1) **1.B.2.c.i. Fugitive Emissions from Oil, Natural Gas and Other Sources, Oil – Venting and Flaring-CH_4 emissions**

- **the activity data are available;**
- **for the Oil Produced, in Table I-58 of the 1996 IPCC Guideliness-Reference Manual there are no default emission factor value for the Former USSR, Central and Eastern Europe; also, the value is not available for this region in the 1996 IPCC Guideliness-Workbook and in the IPCC Good Practice Guidance 2000.**

2) **1.B.2.c.ii. Fugitive Emissions from Oil, Natural Gas and Other Sources, Gas – Venting and Flaring-CH_4 emissions**

- **the Included Elsewhere notation key was used for the activity data relevant to flaring; the relevant activity data and CH_4 emissions are included within the venting activity.**

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Public electricity and heat production, 1A1a	CO_2, CH_4, N_2O	**Level & trend**		**X**	

Description of problem identified:

During the review week the ERT compared the official energy balance as provided in the national inventory report (NIR) to the fuel consumption data reported in the CRF for the public power and heat production (1A1a).

From the comparison the ERT notes that Romania reports a value the fuel consumption of gaseous fuels, 155630 TJ, which is lower in comparison to the value reported in the official energy balance (188653 TJ). The comparison data is presented in the table below.

Responding to the ERT during the review week, Romania acknowledged that the CRF value is incorrect.

Category description	Natural gas Energy Balance	Natural gas CRF table
	TJ	TJ
9. Transformation input	155630	
10. Central power plants	85104	
12. Central heating plants	70527	
28. Consumption in the energy sector	33023	
29. Coal mining	101	
30. Extraction of oil and gas	10358	
31. Mining of uranium and thorium	232	
32. Manufacture of coke and refined petroleum products	19207	
33. Own consumption	3124	
Total	188653	155630

Recommendation by ERT:

The ERT requests Romania to:

- *Correct the estimated emissions of CO_2, CH_4 and N_2O from public power and heat production taking into account the full amount of natural gas in the energy balance (188653 TJ), and include the revised emission estimates in the revised CRF tables.*

Response / Information by Party:

Last value in red was omitted from the summation values for CH_4 consumption in EB.

A correction was made in 1A1a the CRF tables (2008).

Potential problem unsolved? Rationale:
The ERT considers the response by the Party satisfactory.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Public electricity and heat production, 1A1a	CO_2, CH_4, N_2O	**Level & trend**		**X**	

Description of problem identified:
During the review week the ERT compared the official energy balance to the fuel consumption data reported in the CRF for the public power and heat production (1A1a).

From the comparison the ERT noted that the fuel consumption of liquid fuels in reported in the CRF (79287 TJ) is lower than the value reported in the official energy balance (84175 TJ). Data from the energy balance is presented in the table below.

During the review week Romania did not provide explanations to the ERT, and the ERT considers that emissions from use of liquid fuels in this category could be underestimated.

Category description	Gasoline	Kerosene	Diesel Oil	Oil	Refinery gas	LPG	Other petroleum products	Total	CRF
	TJ	TJ	TJ	TJ	TJ	TJ	TJ	TJ	TJ
9. Transformation input	**1**	**0,117**	**283**	**10957**	**2113**	**75**	**2013**	**15442**	
10. Central power plants	0,06	0	169	5333	749	0	1253	**7504**	
12. Central heating plants	0,5	0,1	114	5624	1364	75	761	**7939**	
28. Consumption in the energy sector	**4955**	**281**	**1554**	**3995**	**28866**	**1915**	**27167**	**68733**	
29. Coal mining	0,6	0	132	0	0	0	22	**154**	
30. Extraction of oil and gas	30	20	723	404	1081	4	992	**3253**	
31. Mining of uranium and thorium	0	2	0	0	0	0	0	**2**	
32. Manufacture of coke and refined petroleum products	4908	181	561	3282	27679	1808	26002	**64420**	
33. Own consumption	17	78	138	310	106	103	151	**904**	
Total	**4956**	**281**	**1836**	**14953**	**30978**	**1991**	**29180**	**84175**	**79287**

Recommendation by ERT:
The ERT requests that Romania:

- *Provide explanations justifying that the differences between the energy balance and the inventory and that emissions for this category have been estimated and reported correctly. For that purpose, the Party may provide evidence that:*
  - *The reported amount of liquid fuels in sector 1A1a is in accordance with the official energy balance; or*
  - *In which category of the CRF the remaining liquid fuel consumption in the energy balance has been reported, and demonstrate that.*

- *If Romania reconsiders that the fuel consumption and emissions are underestimates, Romania should:*
  - *Revise the estimates of emissions of CO_2, CH_4 and N_2O from public power and heat production taking into account the full amount of liquid fuels in the energy balance, , and include the revised emission estimates in the revised CRF tables.*

Response / Information by Party:

In table 1A1a - Liquid Fuels - the value is 79286.945 for fuel consumption;
In the above table we have been write the red value which was modified by the NIS, after the receipt of EB, because of that a difference appeared and was observed by an expert.. **Last value in CRF table is correct.**

Potential problem unsolved? Rationale:

The ERT considers that the explanations by Romania are unclear, and it is very difficult for reviewers to decide if the issue is solved or not. Explanations of why data from NIS instead of EB is preferred is not provided in the response. It is not clear if the EB was corrected or not and why. This is a potential case for adjustments unless the Party provides clear explanations.

Response / Information by Party:

The correct value to be used as liquid fuels consumption is 79,286.95 TJ; the value is part of the Energy Balance elaborated and sent by the National Institute for Statistics.

After sending the November 2009 version of the Energy Balance (EB), the National Institute for Statistics (NIS) communicated that it made a correction (to the last value mentioned in red within the next table) to the relevant value; the National Institute of Statistics integrated the revised value within the revised EB for september 2008 .

Category description	Gasoline	Kerosene	Diesel Oil	Residual fuels oil	Crude Oil	Refinery gas	LPG	Other petroleum products	Total	CRF
	TJ	TJ	TJ	TJ	TJ	TJ	TJ	TJ	TJ	TJ
9. Transformation input	**0.586**	**0,117**	**282.657**	**10957.351**	**0**	**2112.764**	**75.330**	**2013.321**	**15442.122**	
10. Central power plants	0.059	0	169.061	5333.333	0	748.527	0	1252.576	**7503.556**	
12. Central heating plants	0.527	0,117	113.596	5624.018	0	1364.237	75.330	760.745	**7938.570**	
28. Consumption in the energy sector	**49.342**	**281.076**	**1553.662**	**3995.495**	**17.346**	**28865.686**	**1915.459**	**27166.755**	**63844.821**	
29. Coal mining	0.557	0	131.704	0	0	0	0	22.034	154.295	
30. Extraction of oil and gas	29.769	19.983	723.212	403.901	17.346	1080.994	3.604	991.658	3270.467	
31. Mining of uranium and thorium	0	1.934	0	0	0	0	0	0	1.934	
32. Manufacture of coke and refined petroleum products	1.742	180.723	560.538	3281.688	0	27678.509	1808.455	26002.373	59514.028	
33. Own consumption	16.848	78.436	138.208	309.906	0	106.183	103.400	150.690	903.671	
Total	**49.928**	**281.193**	**1836.319**	**14952.846**	**17.346**	**30978.450**	**1990.789**	**29180.076**	**79286.947**	**79286.947**

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Energy industries and Manufacturing industry and construction, 1A1 & 1A2	CH_4	Non-KC		**X**	

Description of problem identified:

The ERT notes that Romania uses tier 1 default emission factors to estimate CH_4 emissions from biomass combustion in sector 1A1('Energy Industries') and 1A2 ('Manufacturing Industries and construction').

However during the review the ERT noted that the IEF (29.60 kg/TJ) is lower than the IPCC default value (30 kg/TJ). Responding to the ERT during the review week Romania acknowledged that the used value is incorrect.

Recommendation by ERT:
The ERT requests Romania:

- *Revise the emission estimates using the correct CH_4 emission factor (30 kg/TJ) for biomass in public power and heat production and manufacturing industries and construction , and include the revised emission estimates in the revised CRF tables.*

Response / Information by Party:

In the spreadsheet was a mistake of applying the formula for calculating the emission of CH_4 (the formula was included in a row below the row with the consumption of biomass calculation).
It was corrected in the CRF tables (1989-2008).

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, transport, 1A3	CO_2, CH_4, N_2O	Level & Trend	**X**		

Description of problem identified:
During the review week the ERT compared the official energy balance as provided in the national inventory report (NIR) with the fuel consumption data reported in the CRF for the transport sub-sector.

From the comparison, the ERT identified several discrepancies between the official energy balance and the fuel consumption data reported in the CRF. During the review week Romania responded to the ERT that the activity data (AD) used to estimate emissions for the sector was collected from a different energy balance.

The differences identified by the ERT are:

- *A value of biomass consumption (35.57 TJ)reported in the energy balance but not included in the CRF;*
- *Solid fuel consumption in the energy balance (0.645 TJ) but not included in the CRF.*

The ERT considers that the AD reported in the CRF should match the values provided in the official energy balance that is part of the NIR. The ERT also considers that the information provided by Romania is not transparent enough to verify if emissions from transport are not underestimated.

Recommendation by ERT:
The ERT requests that Romania:

- *Provide explanations and justifications for the use of AD from a different energy balance, clarifying that the fuel consumption for this category is not underestimated or included elsewhere;*
- *Otherwise, provide revised estimates:*
  - *Estimate emissions from the biomass consumption in the transport sector based on the data available in the energy balance and report the fuel consumption and emissions in the category that Romania believes is appropriate for this fuel consumption;*
  - *Estimate emissions from the solid fuel consumption in the transport sector based on the data available in the energy balance and report the fuel consumption and emissions in the category that Romania believes is appropriate for this fuel consumption;*
  - *and include the revised emission estimates and information in the appropriate revised CRF tables.*

Response / Information by Party:

- Consumptions registered in the EB for Transport are not broken down by type of transport, therefore NIS provides us along with EB a paper types with the consumption of transport fuels, which we annexed it to print.
- The response received from the NIS registered Solid Fuel consumption in the EB for Railways, were included in the CRF tables at 1AA3C. Biomass consumption we have introduced in a new section attached to the OTHER Fuels. The system does not allow attaching a new combustion at the Railways node. (1989-2008 time series).

CH_4 and N_2O emissions estimate was made using the EF for Biomass at Stationary Combustion as IPCC 2006, page 3.40, as in 1996 IPCC / EF referance manual is not specified for Railways, PAGE 1.35

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, transport, road transport, 1A3b	CO_2, CH_4, N_2O	Level, trend	**X**	**X**	

Description of problem identified:

During the review week the ERT compared the official energy balance as provided in the national inventory report (NIR) with the fuel consumption data reported in the CRF for the transport sub-sector. The following issues were identified related to the emission estimates from road transport:

- *The consumption of LPG reported in the CRF (2116 TJ) does not match the energy balance (2396 TJ).*
- *Emissions of CH_4 and N_2O from the use of lubricants as fuel have not been estimated for road transport (and other transportation, 1A3e), despite the fact that CH_4 and N_2O emission factors are available in the IPCC Guidelines and Romania reports emissions of CH_4 and N_2O for use the use of lubricants in navigation.*

Recommendation by ERT:

The ERT requests that Romania:

- *Provide explanations and justifications for the differences between the energy balance and the CRF, clarifying that the fuel consumption for this categories is not underestimated or included elsewhere;*
- *Otherwise, provide revised estimates:*
  - *Estimate emissions of CO_2 from LPG in road transport based on the data in the official energy balance;*
  - *Estimate emissions of CH_4 and N_2O from the use of lubricants using the emission factors used by Romania for national navigation;*
  - *and include the revised emission estimates and information in the appropriate revised CRF tables.*

Response / Information by Party:

• Activity data used in the calculation of transport emissions in energy balance are taken not from consumption but from the sheet on all types of transport provided by the NIS, but separately from the consumption of energy balance which are not divided by type of transport. The consumption of **LPG NOT BEEN DETAILED BY TYPE OF TRANSPORT.**

I attached sheet provided by the NIS.

- Referring to CH4 and N2O emissions: The IPCC Guidelines for National Greenhouse Gas Inventories: Referance Manual / Revised 1996 at 1.35 and 1.36 page factors for CH_4 and N_2O emissions for Road Transport are given only for GASOLINE and OIL, so can't use for lubricants.

In sailing we could use the IPCC emission factor because the value specification is not strict.
Fuel consumption in the Road Transport by type of transport received from the NIS to Road Transport lubricants are written for non-energy combustions because they are not estimate emissions, but for Navigation there is energy and non-energy fuel consumption, we calculated the energy consumption of CH_4 and N_2O emissions.

Potential problem unsolved? Rationale:

The ERT considers that the explanations by Romania are unclear, and it is very difficult for reviewers to decide if the issue is solved or not. In particular, it is not clear where emissions from LPG use in transport are used. This is a potential case for adjustments unless the Party provides clear explanations.

Response / Information by Party:

The fuel consumption in transport data are provided by the National Institute for Statistics (NIS) separately (part of a transport sheet) than the Energy Balance (EB) and at a higher disaggregation level (by mean of transport); the total LPG fuel consumption between the two documents is constant and equals 2396 TJ.

Within the transport sheet, the total LPG fuel consumption in transport is disaggregated as follows:

- road transport = 2116 TJ;
- navigation = 278.582 TJ;
- railways = 1.733 TJ.

Giving the availability of a IPCC default emission factor only for LPG and CO_2 for the Road Transport Sub-sector, only the CO_2 emissions from the use of LPG in the Road Transport Sub-sector could be estimated.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Other sectors, Commercial/Institutional, 1A4a	CO_2, CH_4, N_2O	Level, trend	X		

Description of problem identified:

During the review week the ERT compared the official energy balance as provided in the national inventory report (NIR) with the fuel consumption data reported in the CRF for the transport sub-sector.

From the comparison the ERT identified that a consumption of refinery gas reported in the official energy balance (9.2 TJ) was not included in the CRF under liquid fuels.

Recommendation by ERT:
The ERT requests that Romania:

- *Provide explanations and justifications for the differences between the energy balance and the CRF, clarifying that the fuel consumption for this categories is not underestimated or included elsewhere;*
- *Otherwise, provide revised estimates:*
  - *Estimate emissions of CO_2, CH_4 and N_2O from the use of refinery gas in the commercial/institutional sector, and include the emission estimates and information in CRF tables.*

Response / Information by Party:

We introduced the CRF tables - 1AA1A - REFINERY GAS consumption values for the EB - OTHER BRANCHES OF ECONOMY - item during the period 1989-2008.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory. The ERT notes that better explanations by the Party could have simplified the work by the ERT.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Energy, Road transport, Commercial/institutional, Other sectors, 1A3b, 1A4a, 1A5	CO_2, CH_4, N_2O	Level & trend	X		

Description of problem identified:

Romania includes as annex to the NIR a methodological note for the energy balance.
The ERT noted that the methodological note shows that the following categories are included in the export category:

- *Fuel sold to foreign road vehicles*
- *Diplomatic representations in Romania*
- *Military fuel use*

The ERT considers that the fact that these consumptions are reported under export implies that estimates for these sources are not included under domestic consumption. Responding to the Party during the review, Romania confirmed that the ERT's interpretation of the methodological note is correct. The ERT considers that these sources should be included in domestic consumption, and that the emission inventory is underestimated .

The ERT requests that Romania:

- *Estimate fuel consumption sold to foreign vehicles and include this consumption and the associated emissions under road transport, 1A3b;*
- *Estimate fuel consumption used by diplomatic representations in Romania and include this consumption and the associated emissions under commercial/institutional plants, 1A4a;*
- *Estimate military fuel use and include this consumption and the associated emissions under other stationary, 1A5a and other mobile or 1A5b, depending on the end-use of the fuel;*
- *and include the revised emission estimates and information in the appropriate revised CRF tables.*

Response / Information by Party:

According to response received from the NIS, "NIS has no data on fuel consumption related to vehicle sales of foreign diplomatic or military purposes.". The ERT considers that this is a potential case for adjustments. However, the ERT asks that Party gives a brief explanation of how fuel is supplied to diplomatic vehicles which makes it impossible to account for it under National Consumption. Party should also explain why this data cannot be estimated from available statistics.

Response/Information by Party:

All fuel consumption associated to the fuel sold to foreign road vehicles, diplomatic representations in Romania and to the military fuel use are part of the domestic consumption; therefore, they are included in the national GHG total, as follows:

1. Fuel consumption for the three categories are captured in the total consumption of fuels for road transport(1A3b);

2. within the 1A4a category (Commercial/Institutional) was included the fuel consumption/associated emissions by diplomatic representations in Romania.

With reference to the methodological note in the Energy Balance (EB), the National Institute for Statistics (NIS) representatives communicated that the statement that the fuel consumption in the three mentioned activities is included under export is an error, these consumptions being included under the national use; NIS corrected the error (at the methodological note level) as part of the revised EB for 2009.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
2.B.4. Carbide Production: Calcium carbide	CO_2	Non-KC	X		X

Description of problems identified:

The ERT noted that Romania has reported 2007 and 2008 emissions and activity data from calcium carbide production as confidential ('C'), and no explanations were provided. Emissions from this category are not included elsewhere. Therefore, the ERT considers that the inventory is underestimated for 2008.

Responding to the ERT during the review week, Romania stated that, taking into account the new status of Romania as member state of the European Union (EU) • which has started by 2007 • it is obliged (Law Statistics) to respect the rules that statistical data is confidential when there are fewer than three producers and if one of these achieves over 80% of the global national production.

However, the ERT also notes that, from the data reported for the period 1989 • 2006, it can be concluded that for this period apparently only emissions from CaC2 use were included (Romania uses an EF of 1.1 ton/ton), but not emissions from production.

CO2 emissions from Carbide production originate from two other sources besides use:

- *Use of reducing agent. Responding to the ERT during the review week, Romania stated that the emissions from the use of the reducing agent are likely included in the energy sector, since no division of coke between feedstock and combustion purposes could be made by the Party.;*
- *Use of carbonate products (limestone). Emissions originating from CaO (from CaCO3 heating) to be consumed during CaC2 production are missing in this category. Romania provided information during the review week explaining that emissions from the use of carbonates in this sector were not allocated under category limestone use (2A3) and it could not clarify if the emissions of CaO to be consumed at CaC2 production were allocated in 2A2 (Lime Production). The ERT considers that the information provided is insufficient to verify if there is an underestimation in this category.*

The ERT concludes that the inclusion of emission from coke in the energy sector is an allocation issue and does not affect total emissions. However, the potential omission of limestone or lime use emissions could be a case of underestimation of emissions.

Recommendation by ERT:

The ERT requests that Romania:

- *Provide further explanations for emissions from the use of pet-coke use as reducing agent in CaC2 production.*
- *Provide further explanations whether emissions from the use of carbonates for carbide production are included in the inventory, and if yes, where;*
- *Otherwise:*
  - *Prepare and report CO2 emissions from carbide production under category 2.B.4. If emissions can not be reported separately for confidentiality reasons, then the ERT recommends that Romania finds alternative ways of reporting such as their inclusion aggregated with other categories;*
  - *and include the revised emission estimates and information in the appropriate revised CRF tables.*

The ERT notes to the Party, that it can use to estimate emissions related to CaC2 production (pet-coke as reducing agent to be consistent with the energy sector) the following methodology:

IPCC 96: pg 2.21 and 2.22: AD, to be provided by the Party
If AD is CaC2 production:
CaC2 Production EmissionsCO2 = AD[CaC2 production] EF [default IPCC], where:*
EF production IPCC 96 = 1.09 tCO2 / t CaC2

Or alternatively:

If AD provided is pet-coke consumption (to be consistent with the energy sector):
CaC2 Production and use EmissionsCO2 = AD [pet-coke consumption] Carbon content petcoke [provided by the Party - in t C/ t pet-coke]*

The ERT notes to the Party, that it can use to estimate CaO emissions related to its consumption at CaC2 production, the following equation:

$$ECO2 = AD\ [CaC2\ production]^{*}\ EF\ (0.76\ tCO2 / t\ CaC2).$$

Considering the methodology in IPCC 1996: pgs 2.21 and 2.22: AD yet to be provided by the Party

Response / Information by Party:

I. According with the data provided by **Ministry** of Economy, Commerce and Business Environment, there are no calcium carbide production related with *2007 and 2008 years*. The *changes in notation keys* related with carbide production sector in 2007 and 2008 within CRF data base were made.

II. According with IPCC 1996 Methodology – Reference Manual CO_2 emissions result from calcium carbide production may be calculated from the use of *raw materials (limestone and coke)* or *from the production (pgs. 2.21).*

Production of CaC2 (use of raw materials):

$CaCO_3 \longrightarrow CaO + CO_2$

$CaO + 3C \longrightarrow CaC_2 + CO \ (\longrightarrow CO_2)$

Use of carbide (from production):

$CaC_2 + 2H_2O \longrightarrow Ca(OH)_2 + C_2H_2 \longrightarrow 2CO_2$

Also compliance with IPCC 1996 Methodology – Workbook, we taking into account the issue related with: calcium carbide is made by heating calcium carbonate (CaCO3) and subsequently reducing lime (CaO) with carbon (e.g., petrol coke). Both steps lead to emissions of CO_2. If the quantity of coke consumed is not known, CO_2 emissions can be estimated from carbide production data.

Considering the information above we have used the second method *(use of carbide)* in order to estimated the CO_2 emissions from calcium carbide production.

III. Please consider the next issues where I will explain the Romania's approach in terms of estimating emissions:

Production of CaC2:

$CaCO_3 \longrightarrow CaO + CO_2$

$CaO + 3C \longrightarrow CaC_2 + CO \ (\longrightarrow CO_2)$

Regarding the "CaO step" – in order to obtain CaO, a heating process of $CaCO_3$ it has been taking place. For estimating the CO_2 emissions from lime production *(2A2)* the data from NIS has been used and default EF's. The national statistics has provided the national production of lime (quicklime and dolomite lime) where are also included the amount of lime related with calcium carbide production. In order to avoid a double counting, the emissions from heating of calcium carbonate within the CaC_2 production were not taking into account on this subsector because these CO_2 emissions are accounted within *2A2 subsector*.

Regarding the "reduction step" (the reduction of CaO with carbon) – in order to reduce the CaO it was use an amount of coke (reduction agent). Within the energy balance NIS has provided the national consumption of coke related with the chemistry sector where are also included the data on coke use in CaC_2 production. The data on coke used there are not disaggregated for each type of industry (e.g. carbide production, ammonia production). These data were accounted within energy sector and in order to avoid a double counting were not taking into account on this subsector (CaC_2 production) because these CO_2 emissions are accounted within *1AA2F- Other non specified – solid fuels subsector – Energy Sector.*

Use of carbide:

$CaC_2 + 2H_2O \longrightarrow Ca(OH)_2 + C_2H_2 \longrightarrow 2CO_2$

The method related with *"use of product"* it was use in order to estimate the CO_2 emissions for all period.

ECO2 = AD [CaC2 production]* EF (1.1 tCO2 / t CaC2)

Potential problem unsolved? Rationale:

The ERT notes that the Party states that no production of Calcium Carbide occurred in 2008, and concludes that no adjustments apply. The ERT will provide recommendations in the ARR on how the Party may improve its submission for the next year.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
2.B.4. Carbide Production: Silicon carbide	CO_2, CH_4	Non-KC	X		X

Description of problem identified:

Romania reports CO2 and CH4 emissions from silicon carbide (SiC) production as not estimated ('NE').

The Party also informed the ERT that for 2008 activity data (SiC production) is available but can not provided for confidentiality reasons. The ERT notes that alternative data could be used to estimate emissions: consumption of pet-coke, the C content of pet-coke; and the share of C input sequestered in the product.

The ERT considers that this represents a non estimate of a source and a clear underestimation of emissions.

Recommendation by ERT:

The ERT requests that Romania:

- *Provide and CO2 and CH4 emissions from SiC production;*
- *Provide clear and transparent information on what was the methodology used in the calculation;*

The recommendation by the ERT is that, Romania could use the following approach:

- *1) To estimate CO2 emissions:*

  IPCC 96: pg 2.20: AD to be provided by the Party
  SiC Production EmissionsCO2 = AD [petcoke consumption] C (100-S)* 3.67*10-4, where:*
  C = C content in coke => IPCC default [97%] or Country specific
  S = %C input sequestered in SiC => 35% or Country specific

- *2) To estimate CH4 emissions:*
  - *a) If production data is used:*

    IPCC 96: pg 2.21: AD yet to be provided by the Party
    If AD provided is SiC production:
    SiC Production EmissionsCH4 = AD [SiC production] EF [default IPCC], where:*
    EF = 11.6 kg CH4 / t SiC

  - *b) Alternatively, if pet-coke consumption is used.*

    If AD provided is petcoke consumption:
    SiC Production EmissionsCH4 = AD [petcoke consumption] EF [default IPCC], where:*
    EF = 10.2 kg CH4 / t petcoke

The ERT further requests that Romania include the revised emission estimates and information in the appropriate revised CRF tables.

Response / Information by Party:

The data on silicon carbide production are available only for *2008 year*. The production data are provided by NIS and are confidentially. In order to estimate CH_4 emissions a default emission factor and production data on silicon carbide production were used. The *estimate of CH4 emissions* related with silicon carbide production in 2008 within the CRF data base was made.

SiC Production Emissions CH4 = AD [SiC production]* EF [default IPCC], where:
EF = 11.6 kg CH4 / t SiC

The CO_2 emission from silicon carbide production couldn't be estimated under this category *(2B4.1.)* because the data on coke consumption related with this industry are taking into account in Energy sector *(1AA2F- Other non specified – solid fuels subsector)*. Within energy balance there are provided the information related with coke consumption on chemistry sector, the data are not disaggregated, the coke consumption being provided from all chemistry industry and implicitly for the production of silicon carbide subsector. The *change in notation keys* related with CO2 emissions in 2008 was also made within CRF data base.

Potential problem unsolved? Rationale:

The response by the Party is insufficient, and the ERT did not receive sufficient information to verify if CO2 emissions are properly estimated (data on pet coke use per industrial activity is missing). This is a potential case for adjustments unless the Party provides data on use of pet coke per industry type.

Response/Information by Party:

The emissions related to the coke consumption are accounted in the Energy Sector within the *1AA2F- Other non specified – solid fuels subsector.*

According with the IPCC 2006 Methodology the CO_2 emissions released during silicon carbide production could be estimated using the following approach (formula is also recommended by the ERT):

SiC Production Emissions$CO2$ = AD [petcoke consumption]* C (100-S)* $3.67*10^{-4}$, where:
C = C content in coke => IPCC default [97%] or Country specific
S = %C input sequestered in SiC => 35% or Country specific

Within the Industrial Processes sector the CO_2 emission from SiC production are noted as IE because the emissions related with coke consumption are accounted in the Energy Sector *(within the 1AA2F- Other non specified – solid fuels subsector)*. In this sense we attached the relevant pages from the *2008 Romanian Energy Balance* in order to provide more details regarding the way the coke consumption is integrated within the Energy Balance:

- The page no. 12 provides information regarding the category where is accounted the coke consumption: these data are taken into account in category *"50. Manufacture of other non metallic mineral products"* and it was aggregated to above class "*38. Industry*". The NACE rev. 2 document was consulted in order to establish the right screening of silicon carbide production industry;
- The page no. 35 is part of the *Methodological Note to the Energy Balance* and there are detailed information referring to the type of industrial activities which are contained by class: "*38. Industry" – excluding the energy sector consumption (based on NACE rev. 2 classes)*. There are also included here the facts related with the type of coke used within this industry (energy transformation of coke doesn't happen during the coke consumption);
- The page no. 36 is part of the *Methodological Note to the Energy Balance* and provides exact information regarding the category where the coke consumption from silicon carbide production sector is included – "*NACE Rev. 2 cod. 23 - Manufacture of other non metallic mineral products)".*

Within the Romanian Energy Balance there are provided the data/information related with coke consumption within the "Manufacture of other non metallic mineral products" category, the data beeing not disaggregated per industry type: the coke consumption data are provided only for entire "*Manufacture of other non metallic mineral products industry"* and implicitly for the production of silicon carbide subsector.

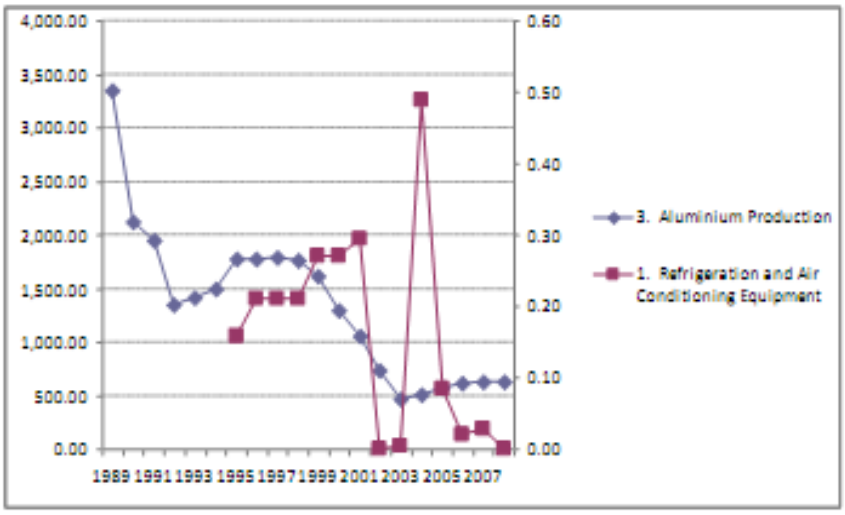
The current needs of the National Institute for Statistics/other relevant Romanian institutions does not require the disaggregation of the pet consumption by industry type; therefore, the pet coke consumption data by industry type are not available in Romania.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
2.F.a.1 Refrigeration and AC equipment	PFC	Non-KC			X

Description of problem identified:

The ERT noted a trend with large inter-annual variations for PFC emissions from refrigeration, for which explanations are not provided. The ERT also notes that low emissions in 2008 in comparison to previous (See trend for refrigeration and air condition equipment in the figure below), and emissions could be underestimated for this year.

However, the Party does not provide background information explaining this trend, the ERT cannot check if is underestimated. The ERT believes that, considering the fact that refrigeration equipment is characterized by a extended lifetime, these variations needs further explanation. The Party did not provided responses on this issue during the review week.



Recommendation by ERT:

The ERT requests that Romania:

- *Provide background information to explain the variable trend and the low 2008 emissions;*
- *Otherwise, revise the time series activty data and emissions.*
-

The ERT further requests that Romania re-submit the CRF tables if emissions estimates are revised.

Response / Information by Party:

The data use in order to estimate the actual emissions from PFC consumption are estimated based on consumption data annually provided by economic agents.

There are large inter-annual variations for PFC emissions from refrigeration and air condition equipment and low emissions in 2008 in comparison to previous due to along the estimated period many economic operators using F-gases in their activity have decreased its consumption or have been closed.

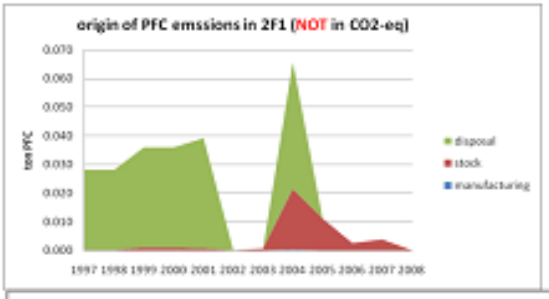
More exactly in 2008 there are estimated only emissions from *Domestic Refrigeration* sector compared to previous period (when the actual emissions were estimated from Commercial Refrigeration, Transport Refrigeration, Industrial Refrigeration, Air-Conditioning sectors). Also in 2008 there were estimated only *C5F12 emissions* while in the previous period there were estimated CF4, C5F12, C4F10, C6F14 emissions.

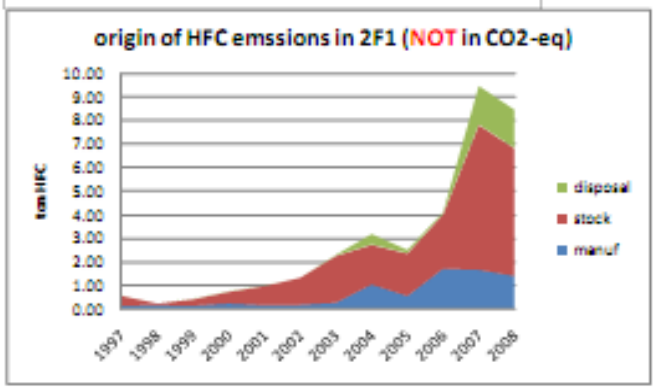
Potential problem unsolved? Rationale:

Reply from ERT :

Indeed large inter-annual changes in PFC emissions occur for the category refrigeration and air-conditioning. However if these variations are to be explained by changes in economic activity, as the Party proposes, then a similar pattern is expected to occur also for the HFC emissions of the same category and sources. This is however not the case. HFC emissions for this category show a constant increase.
Further analysis by the ERT indicates that it could be that the PFC amounts and emissions from the years 2002-2003-2004 could be the outliers. The Party is invited to investigate further this issue. Figures on the origin of PFC and HFC emissions in 2F1 are attached.

The ERT considers the response by the Party not fully satisfactory. The ERT notes that better explanations by the Party could have simplified the work by the ERT. Nevertheless, given the information provided by the Party no adjustments will be calculated.



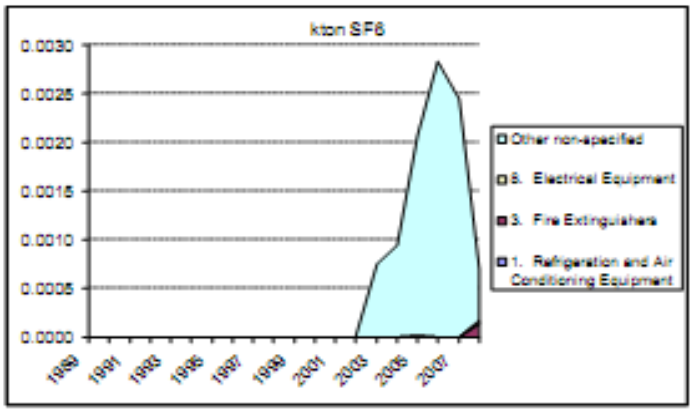


Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
2.F.9.Other	SF_6	Non-KC			X

Description of problem identified:

The ERT noted a 79% drop (sharp decrease) in emissions between 2007 and 2008 (see light blue shaded area in the chart below), for which explanations are not provided in the NIR or CRF. The Party did not provided responses on this issue during the review week.

The ERT considers that there is an apparent inconsistency in the time-series, and emissions for 2008 could be underestimated for this category.



Recommendation by ERT:

The ERT requests that Romania:

- *Provide background information to explain the variable trend and the low 2008 emissions;*
- *Otherwise, revise the time series of activity data and emissions.*

The ERT further requests that Romania re-submit the CRF tables if emissions estimates are revised.

Response / Information by Party:

Starting with 2010 submission for 2003-2008 period the actual emissions was re-estimated relative to last submission because according to the questionnaires received from the operators a new economic agent using SF_6 in its activity (production of pieces and accessories for vehicles and motor vehicle) was new indentified. In 2008 the actual emissions decreased related to 2007 because the same economic agent user of SF_6 has reduced significantly its SF_6 consumption.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Agriculture, Enteric fermentation, sheep (4.A3), and swine (4.A8)	CH_4	Level, Trend			X

Description of problem identified:

Romania indicates in its NIR (chapter 6.2.2) that uses default emission factors for developing countries from the 1996 Revised IPCC Guidelines (table 4-3), to calculate emissions of CH4 from enteric fermentation for sheep and swine.

The ERT notes that the default emission factors for developing countries for these species are lower than for developed countries and Romania doesn't provide ERT with a clear justification for the selection of emission factors for developing countries.

The ERT considers that, considering the lack of information, it is not possible to assess if the emissions from these categories are underestimated.

Recommendation by ERT:

The ERT requests that Romania:

- *A clear justification regarding the choice of emission factors for developing countries, based on the characteristics of ist livestock production. The information to be included in the analysis could include inter alia: feed intake, feed composition, fodder quality, livestock breeds, milk yields, practice of manure management.*
- *Otherwise, recalculate emissions for above mentioned livestock sub-categories using the 1996 Revised IPCC Guidelines default emission factors for developed countries (tables 4-3 and 4-5), and include the revised emission estimates in the revised CRF tables.*

Response / Information by Party:

For 2008, the relevant emissions from sheep and, respectively, swine, have been recalculated considering the developed countries default emission factors values provided in the 1996 Revised IPCC Guidelines–Reference Manual–Tabel 4.3; the values of the emission factors (kg methane/head/year) have been changed as follows:

- sheep – from 5 to 8;
- swine – from 1 to 1.5.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

However, to achieve time series consistency of estimates, ERT recommends Romania to perform recalculations over the whole time series and not only for 2008 in the next submission.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Agriculture, Manure management: sheep • 4.B(a)3; goats • 4.B(a)4: horses • 4.B(a)6: mules and asses • 4.B(a)7; and poultry 4.B(a)9.	CH_4	Level, Trend			X

Description of problem identified:

Romania indicates in its NIR (chapter 6.2.2) that uses default emission factors for developing countries from the 1996 Revised IPCC Guidelines (table 4-5), to calculate emissions of CH4 from manure management for sheep, goats, horses, mules and asses and poultry.

The ERT notes that the default emission factors for developing countries for these species are lower than for developed countries and Romania doesn't provide ERT with a clear justification for the selection of emission factors for developing countries.

The ERT considers that, considering the lack of information, it is not possible to assess if the emissions from these categories are underestimated.

Recommendation by ERT:

The ERT requests that Romania:

- *clear justification regarding the choice of emission factors for developing countries, based on the characteristics of ist livestock production. The information to be included in the analysis could include inter alia: feed intake, feed composition; fodder quality; livestock breeds; milk yields; practice of manure management.*
- *Otherwise, recalculate emissions for above mentioned livestock sub-categories using the 1996 Revised IPCC Guidelines default emission factors for developed countries (table 4-5), and include the revised emission estimates in the revised CRF tables.*

Response / Information by Party:

For 2008, the relevant emissions from sheep, goats, horses, mules and asses and, respectively, poultry, have been recalculated considering the developed countries default emission factors values provided in the 1996 Revised IPCC Guidelines–Reference Manual–Tabel 4.5; the values of the emission factors (kg methane/head/year) have been changed as follows:

- sheep – from 0.16 to 0.28;
- goats – from 0.17 to 0.18;
- horses – from 1.6 to 2.1;
- mules and asses – from 0.9 to 1.14;
- poultry – from 0.018 to 0.117.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

However, to achieve time series consistency of estimates, ERT recommends Romania to perform recalculations over the whole time series and not only for 2008 in the next submission.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Agriculture, Direct soil emissions, N-fixing crops (4D.1.3) Agriculture, Direct soil emissions, Crop residue (4D.1.4)	N_2O	**Level, Trend**	X	X	

Description of problem identified:

According to the NIR (table 6.20) nitrogen added to soil from perennial grasses, such as lucerne and clover that are legume crops, are accounted for in sub-category crop residue (4D.1.4) and not as N-fixing crops. On the other hand, under N-fixing crops, Romania accounts for pulse and pea production only. The ERT considers that this approach is not in line with the GPG (the GPG recommends to define N-fixing crops production including all N-fixing crops and not just seed yield of pulses and beans).

Taking into account that default IPCC values of nitrogen amount in N-fixing and non N-fixing crops (0,03 and 0,015 kg N/kg dry matter correspondingly) are higher than those used by Romania, the ERT considers that there is a potential case of underestimation of emissions in two categories: 4D.1.3 N-fixing crops and 4D.1.4 Crop residue.

The ERT notes that this recommendation was already included in the previous review report (FCCC/ARR/2009/ROU).

Recommendation by ERT:

The ERT requests that Romania:

- *Perennial grasses that are legumes (e.g. lucerne and clover) should be included in the calculation of emissions from N-fixing crops under sub-category 4D.1.3, and the value of nitrogen content in lucerne and clover has to be changed to the appropriate value (if IPCC defaults are used, from 0,015 to 0,03 kg N/kg dry matter) within the sub-category 4D.1.4.*
- *Include the revised emission estimates and information in the appropriate revised CRF tables.*

Response / Information by Party:

For every year of the period 1989-2008 the relevant emissions in the sub-category 4.D.1.3 have been recalculated by adding to the N-fixing crops the lucerne and clover.

For every year of the period 1989-2008 the relevant emissions in the sub-category 4.D.1.4 have been recalculated by adding to the N-fixing crops the lucerne and clover.

For both the sub-categories 4.D.1.3 and 4.D.1.4, for lucerne and clover, the default value of the fraction of nitrogen ($Frac_{NCRBF}$) used in the emissions calculation is 0.03 kg N/kg of dry biomass.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

Sector, category, sub-category (with code)	Gas	KC / non-KC	Identified inventory problem in terms of:		
			Missing estimate	Estimate provided but not in line with GPG	Estimate provided but lack of transparency
Agriculture, Direct soil emissions, Cultivation of histosols (4D.1.5)	N_2O	Level, Trend	X		

Description of problem identified:

Romania indicates in the NIR (chapter 6.5.2), that the area of cultivated organic soils is considered to be of small size, and emissions generated under this sub-category are probably irrelevant. Therefore, notation key "NO" was use.

The ERT concluded that the information provided by Romania shows that cultivation of histosols may in fact occur, even if very small, and that there is a potential underestimation of emissions.

Recommendation by ERT:

The ERT requests that Romania:

- *Provide emission estimates for cultivation of Histosols;*
- *The ERT advices that if activity data is not available, expert judgement could be used with combination of sources of information such as the Global soils Map's data.*
- *Include the revised emission estimates and information in the appropriate revised CRF tables.*

Response / Information by Party:

Considering the new data on the area of histosols cultivated provided by the Ministry of Agriculture and Rural Development, for 2008, the N_2O emissions associated to the 4.D.1.5 sub-category have been calculated; the data considered in the N_2O emission calculation comprise:
- 1661 ha of area of cultivated histosols;
- a default value of the relevant emission factor of 8 kg N_2O-N/ha-yr, associated with the Mid-Latitude Organic Soils.

Potential problem unsolved? Rationale:

The ERT considers the response by the Party satisfactory.

However, to achieve time series consistency of estimates, ERT recommends Romania to perform recalculations over the whole time series and not only for 2008 in the next submission.