

ASPECTS REGARDING THE IMPEMENTATION OF GUIDELINES FOR THE MONITORING AND REPORTING OF GREENHOUSE GAS EMISSIONS

Carmencita CONSTANTIN¹, Irene Roxana SAMOILĂ², Oana NIHFIDOV^{3*}

Target of UE scheme regarding the emission trading of GHG, represent promotion of reducing efficiently device from technical and economic point of view of GHG by economics operators with activity that generate this kind of emission, in order that the completion of the commitment assume by EU under Kyoto Protocol be less expensive.

*Starting from 1st January 2007, installation in which are developed activities provided in Annex 1 of GD 780/2006, which generate CO₂ emissions will operate based on **GHG Permit**, release by Competent Environment Protection Authority.*

Order 1175/2006, which approve Guideline for the monitoring and reporting of greenhouse gas emissions (GHG), establish the methodology of monitoring and reporting of GHG emissions, for every activity listed in Directive

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1. Introduction

Climate change is the greatest environmental risk facing the world today. Its impacts will be felt across the world, as sea level rise threatens the existence of some small island states and puts millions of people at risk. Temperature increases, drought and flooding will affect people's health and way of life, and cause the irreversible loss of many species of plants and animals.

The Kyoto Protocol, adopted by consensus at the third session of the Conference of the Parties (COP3) in December 1997, was designed to address this

¹ Director of Energy & Environment Division, Institute for Studies and Power Engineering, Romania

² Environmental Engineer – Climate Change Expert, Institute for Studies and Power Engineering, Romania

³ Environmental Engineer, Institute for Studies and Power Engineering, Romania (*Corresponding author)

issue. The Protocol has since been ratified by over 166 countries, and entered into force (became legally binding) in February 2005.

The Kyoto Protocol set legally binding emissions reduction targets on developed countries that have ratified it. Developed countries (Annex 1) agreed to targets that will reduce their overall emissions of a basket of six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) by 5% below 1990 levels over the period 2008-2012 [1].

According to the undertakings at the Kyoto Protocol in December 1997, the European Union should reduce its greenhouse gas (GHG) emissions in 2008 – 2012 period to a level that is 8% below their level of 1990. The European Union committed itself to reduce GHG emissions with at least 20% before 2020⁴.

The European Union – Emission Trading Scheme (EU ETS) is one of the key policies introduced by the European Union to help meet the EU's GHG emissions reduction target under the Kyoto Protocol.

The EU ETS uses a market-based mechanism to incentives the reduction of GHG emissions in a cost-effective and economically-efficient manner. The scheme operates through the allocation and trade of GHG emissions allowances throughout the EU – one allowance represents one tonne of carbon dioxide equivalent [2].

As a result of Directive 2003/87/EC⁵, the European Union's Greenhouse Gas Emissions Trading Scheme (EU ETS) came into operation on 1 January 2005. The aim of the scheme is to contribute to the reduction of GHG emissions from certain industrial activities, which are listed in Annex I of the Directive [3].

The main activity under EU – ETS are:

- ✧ Energy activities;
- ✧ Production and processing of ferrous metals;
- ✧ Mineral industry;
- ✧ Other activities.

In its first phase – from 2005 to 2007 – the EU ETS only applies to emissions of carbon dioxide (CO₂), but in subsequent phases other greenhouse gases may be included.

2. Romanian ETS background

Member States were required to transpose the EU ETS Directive into national legislation. For Romania, the provisions of the Directive has become

⁴ European Council, 8 – 9 March 2007, Bruxelles.

⁵ Directive on Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/EC (OJ L275, 25.20.03).

compulsory after its accession to the EU in 2007 [4]. Romania has committed itself to reduce greenhouse gas (GHG) emissions by 8% compared to the base year of 1989, during the first commitment period 2008-2012. In Romania, the scheme is enforced through the Governmental Decision 780/2006 on Establishing the GHG Emission Trading Scheme [5].

According to in Annex 1 of GD 780/2006, in emission trading scheme are included 245 installations:

- ✧ Energetic fields activities.....160 installations;
- ✧ Production and processing of ferrous metals.....19 installations;
- ✧ Mineral industry.....57 installations;
- ✧ Other activities.....11 installations;

The scheme is divided into periods (phases) for which Member States must develop a National Allocation Plan (NAP), which requires Commission approval. Romania participate in the last year of Phase I and the entire Phase II. The first phase of the scheme (Phase I) started on January 1st 2005 and will end on 31st of December 2007. The second phase (Phase II) will run from 2008 to 2012, corresponding to the first commitment period under the Kyoto Protocol [6].

Each installation has allocated allowances for the particular commitment period in question. The number of allowances allocated to each installation for any given period, (the number of tradable allowances each installation will receive), will be set down in a document called the National Allocation Plan (NAP). The NAP becomes operational after it is approved by the Romanian Government following the final decision of the European Commission.

The Romanian Regulations require all installations carrying out any activity listed in Annex 1 of GD 780/2006, which generate GHG emissions, to hold a GHG emissions permit. The Order 1008/2006 establishes the necessary steps in order to obtain the permit [7].

The operator must submit an application to the competent authority including a description of:

- ✧ the installation and its activities including the technology used;
- ✧ the raw and auxiliary materials, the use of which is likely to lead to emissions of gases listed in Annex 1 of GD 780/2006;
- ✧ the sources of emissions of gases listed in Annex 1 of GD 780/2006 from the installation; and
- ✧ the measures planned to monitor and report emissions in accordance with the guidelines adopted pursuant to Article 14 of Directive 2003/87/EC.

The application shall also include a non-technical summary of the details referred in the technical description. The conditions of the permit will require installations to monitor and report emissions in accordance with the monitoring and reporting plan approved by the competent authority.

The monitoring and reporting guidelines (MRG) are set out in Commission Decision 2004/156/EC⁶, adopted pursuant to Article 14 of the Directive 2003/87/EC. Member States must ensure that the provisions of the monitoring guidelines are applied in the monitoring and annual reporting of GHG emissions of each of the installations covered by the EU – ETS. Member States must choose the appropriate modalities to ensure that these rules are applied by the operators of installations covered under the EU – ETS.

For Romania, the Order 1175/2006, approving guidelines for the monitoring and reporting of GHG emissions, establish the methodology of monitoring and reporting of GHG emissions for every activity listed in Directive.

3. The monitoring and reporting guidelines [8]

The MRG thus provide the legally binding rules for monitoring and reporting of GHG emissions within the EU – ETS. GHG emissions permits shall contain monitoring requirements, specifying monitoring methodology and frequency. The MRG define ‘monitoring methodology’ as “the methodology used for the determination of emissions, including the choice between calculation or measurement and the choice of tiers”. The monitoring methodology specifies how an operator of an installation will carry out the monitoring and reporting of CO₂ – emissions for that specific installation.

The approval of the monitoring methodology is part of the permit granting process. Once approved, the installation has to implement and apply the monitoring of CO₂ emissions in accordance with the monitoring methodology.

The monitoring and reporting process for an installation shall include all emissions from all sources belonging to activities listed in Annex 1 of GD 780/2006, carried out at the installation, of GHG specified in relation to those activities.

The monitoring of emissions shall include emissions from regular operations and abnormal events including start-up and shut-down and emergency situations over the reporting period.

3.1 Choosing monitoring methodology

The complete, transparent and accurate monitoring of GHG emissions requires decisions to be taken when determining appropriate monitoring methodologies. This includes deciding between measurement and calculation as well as selecting specific tiers for the determination of activity data, emission factors and oxidation or conversion factors.

⁶ Decision 2004/156/EC establishing guidelines for the monitoring and reporting of greenhouse gas emission pursuant to Directive 2003/87/EC (OJ L59, 29.01.04)

Before the start of each reporting period, National Environment Protection Agency approves the monitoring and reporting GHG emissions methodology complied by the operator which contains the procedure for determination of the emission factor, the oxidation factor for specific activities, and biomass content for each fuel types/materials.

The monitoring methodology shall be changed if this improves the accuracy of the reported data, unless this is technically not feasible or will lead to unreasonably high costs. All proposed changes in monitoring methodologies or the underlying data sets shall be clearly stated, justified, fully documented and submitted to the competent authority. All changes in methodologies or the underlying data sets shall be subject to approval from the competent authority.

3.2 Determination of GHG emissions

Order 1175/2006 permits to operator a determination of emissions using either:

- ✧ a calculation-based methodology ('calculation'),
- ✧ a measurement-based methodology ('measurement').

The operator may propose to measure emissions if he can demonstrate that:

- ✧ it reliably gives higher accuracy than the relevant calculation applying a combination of the highest tiers, and
- ✧ the comparison between measurement and calculation is based on an identical list of sources and emissions.

The use of measurement shall be subject to the approval of the competent authority. The operator may, with the approval of the competent authority, combine measurement and calculation for different sources belonging to one installation. The operator shall ensure and demonstrate that neither gaps nor double counting concerning emissions occur.

3.3 Calculation of CO₂ emissions

Calculation of CO₂ emissions shall be based either on the following formula:

$$CO_2emissions = activity\ data * emission\ factor * oxidation\ factor$$

or on an alternative approach if defined in the activity-specific guidelines.

The expressions within this formula are specified for combustion emission and process emissions as follows:

- Combustion emissions - Activity data shall be based on fuel consumption. The quantity of fuel used shall be expressed in terms of energy content as TJ. The emission factor shall be expressed as t_{CO_2}/TJ . When energy is consumed not all of

the carbon in the fuel oxidises to CO₂. Incomplete oxidation occurs due to inefficiencies in the combustion process that leave some of the carbon unburned or partly oxidised as soot or ash. Unoxidised carbon is taken into account in the oxidation factor which shall be expressed as a fraction. In the event that the oxidation factor is taken into account in the emission factor, a separate oxidation factor shall not be applied. The oxidation factor shall be expressed as a percentage. The resulting calculation formula is:

$$CO_2emissions = fuel\ consumption\ [TJ] * emission\ factor\ [t_{CO_2}/TJ] * oxidation\ factor$$

- Process emissions - Activity data shall be based on material consumption, throughput or production output and expressed in t or m³. The emission factor shall be expressed in [t_{CO2}/t or t_{CO2}/m³]. Carbon contained in input materials which is not converted to CO₂ during the process, is taken into account in the conversion factor which shall be expressed as a fraction. In the event that a conversion factor is taken into account in the emission factor, a separate conversion factor shall not be applied. The quantity of input material used shall be expressed in terms of mass or volume [t or m³]. The resulting calculation formula is:

$$CO_2emissions = activity\ data\ [t\ or\ m^3] * emission\ factor\ [t_{CO_2}/t\ or\ m^3] * conversion\ factor$$

3.4 The tier approach

The activity-specific guidelines set out in Annexes 3 to 12 contain specific methodologies for determining the following variables: activity data, emission factors, oxidation or conversion factors. The tier system provides a set of buildings blocks to determine the appropriate monitoring methodology for each installation. This introduces flexibility for monitoring different types, sizes and ages of installation and provides a structured and transparent approach to characterize and improve monitoring methodologies. The higher the number of the tier chosen, the higher the level of specificity and accuracy. The tier system forms the backbone of GHG emissions monitoring of installations covered under the EU – ETS.

The operator must, in principle, apply the highest tier level, unless he can demonstrate to the competent authority that this is technically not feasible or would lead to unreasonable high costs.

The operator may apply different approved tiers to the variables: activity data, emission factors, oxidation or conversion factors used within a single calculation. The choice of tiers shall be subject to approval by the competent

authority in the plan of measures for monitoring and reporting emissions of GHGs.

3.5 Retention of information

An operator of an installation shall document and archive monitoring data (activity data, emission, oxidation, conversion factors used, biomass fractions, exhaust gas flow, concentration for CEMS) for the installation's emissions from all sources belonging to activities listed in Annex 1 to the GD 7890/2006 of GHGs specified in relation to those activities.

To allow reproducibility of the determination of emissions by the verifier or another third party, an operator of an installation shall retain for at least 10 years after the submission of the report.

3.6 Quality assurance and control

The operator shall establish, document, implement and maintain an effective data management system for the monitoring and reporting of GHG emissions in accordance with Order 1175/2006. The operator shall put in place this data management system before the start of the reporting period, in order that all data is recorded and controlled appropriately in preparation for verification.

4. Monitoring and reporting guidelines of GHG emissions review

The Commission has undertaken to review the MRG by 31 December 2006, taking into account experiences with their application. Due to the learn from national best practices in implementing of MRG, to the improving of cost – effectiveness of monitoring, to the reduction of burden of participation for small installations, to the development thresholds to facilitate a user – friendly implementation of legal text has been reviewed. MRG review is to be in line with review of ETS – Directive and development of NAP II. Potential changes for the second trading phase would be in place well ahead 1 January 2008. The revised Guidelines was adopted by the Commission 18 July 2007⁷.

The main changes of the revised guidelines are:

- ✧ Guidelines are closer to sector practices way of monitoring and reporting done by operators (use of standard factors for commercial fuels);

⁷ Decision 2007/589/EC establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council

- ❖ Guidelines are more cost effective especially for small emitters (lighter monitoring requirements for small installations/small emitters < 25,000 tonnes CO₂) and for installations using biomass fuels;
- ❖ Guidelines are more aligned with reporting made by Member States under national GHG inventory requirements;
- ❖ Integrity of the system is reinforced maintaining accuracy and credibility of monitoring and reporting;
- ❖ Verification procedures of the monitoring and reporting are strengthened.

5. Conclusions

EU's monitoring and reporting guidelines (MRG) under its ETS are built on three pillars: monitoring; reporting; and the verification of emissions reports.

MRG aims to ensure consistency of national inventories with the UNFCCC market and stakeholder confidence, transparency of GHG monitoring and reporting, a level playing field across the EU, installation accuracy, and cost-effectiveness.

Future aims are to achieve full consistency of national reporting for the second commitment period, maintain basic consistency with other GHG reporting and verification schemes, review and amend activity-specific annexes, improve the cost-efficiency and flexibility of the MRG, maintain accuracy, and incorporate other gases.

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