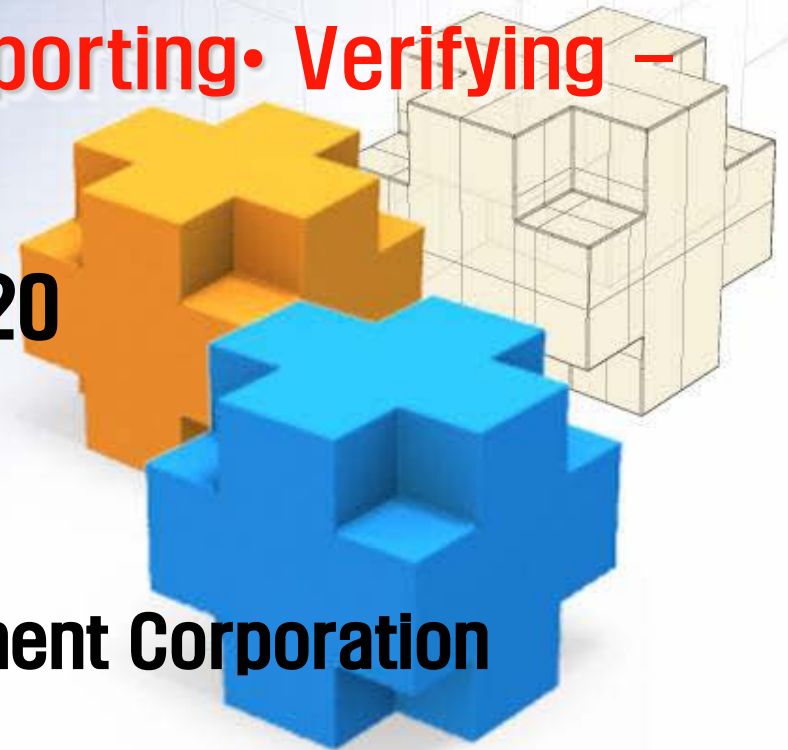


## GHG MRV Guideline (Draft) in the ETS

– MRV : Monitoring • Reporting • Verifying –

2009. 10. 20

Environmental Management Corporation



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# I . MRV Mechanism in the ETS

## MRV System in Korea

### Emissions Monitoring

- ❖ Emissions calculation according to the monitoring plan
  - Direct emissions from the fuel, Indirect from the heat/electricity
  - Coverage : CO<sub>2</sub> (ton)
  - Apply emission registry management system

### Emissions Reporting

- ❖ Report calculated emissions to the CA
  - Compliance year emissions **until the end of February of the Second year**
  - Verified and Re-calculated **until the end of March of the Second year**
  - ※ Monitoring plan **until the end of March of the first year**

### Emissions Verifying

- ❖ Verification of participant's emissions by the third party
- ❖ Verified emissions being reviewed, deliberated and then reported as the relevant year certified emissions

# I . MRV Mechanism in the ETS

## MRV procedure in Korea

1

(Participant) Submitting the monitoring plans

2

(Competent Authority) Reviewing the monitoring plans

3

Calculating and reporting the emissions of the first year

4

(Verifier) Verifying the emissions

5

(Participant) Re-calculation of the emissions and reporting it to the CA

6

(CA) Announcing certified emissions after deliberation

# I . MRV Mechanism in the ETS

**Step 1 Step 2**

*Step 3*

*Step 4*

*Step 5*

*Step 6*

*Reporting  
Monitoring plan*

*Reviewing  
Monitoring plan*

*Calculating,  
Reporting*

*Emissions  
verification*

*Re-calculating,  
Final reporting*

*Emissions  
certification*

## Establishing the Monitoring Plan [ Step 1 ~ Step 2 ]

- ◆ Planning the data and information about all sources at facility level
- ◆ Submitting the Monitoring Plan for reviewing the CA  
(Verification by verifier is omitted for administrative efficiency.)

# I . MRV Mechanism in the ETS

Monitoring Plan needs to be introduced as an advance review process for emission measuring principles such as suitability, integrity, transparency

※ Developed countries (EU, Japan..) has already adopted advance approval

## Key elements of the Monitoring Plan

### General information on the participant's facility

- Business information, characteristics, area, location...

### GHG emissions Measuring Plan

- Identify GHG emission sources and its characteristics
- Plan on GHG emission Calculated methodology by sources  
: ways to monitor, adopted factor, application of activity data and collection plan
- Responsibility information on measuring process & reporting
- Details on data quality management and QA & QC

Utilize

Evaluate suitability of Participant GHG emission Monitoring Plan

Used as major Reference to the Verification, Certification Process

# I . MRV Mechanism in the ETS

**Step 1**

**Step 2**

**Step 3**

**Step 4**

**Step 5**

**Step 6**

*Reporting  
Monitoring plan*

*Reviewing  
Monitoring plan*

*Calculating  
Reporting*

*Emissions  
verification*

*Re-calculating,  
Final reporting*

*Emissions  
certification*

## Calculating and Reporting emissions ( Step 3)

- ◆ Participants calculate GHG emissions from sources at facility-level in accordance with GHG MRG, according to the monitoring plan



## Guideline for Calculating and Reporting emissions

- ❖ Calculating emissions should be based on suitability, integrity, consistency, transparency, accuracy
- ❖ Emission calculation & verification guideline which is applicable in Korea being developed in accordance with IPCC guideline, benchmarking EU & Japanese case.(2009.5)



# I . MRV Mechanism in the ETS

- ◆ Measuring baseline emissions according to the historic emissions in order to set the GHG reduction target
- ◆ Baseline can be reconciled if there's a change about measuring emissions during the compliance year

- ◆ If the change range of emissions is above 5% of baseline, possible to reconcile baseline

$$\text{Changed baseline} = \text{Original baseline} \pm \text{Baseline variation}$$

- ◆ Baseline emission can be reconciled if..
  - the assets (installations, organizations..) were leased, sold, or merged.
  - the ownership or the control of the GHG emission sources was transferred to the inside/outside of the organization.
  - there's a change of emissions due to the change of emission measurement methodology
  - production facilities (capacity) were increased or decreased

# I . MRV Mechanism in the ETS

*Step 1*

*Step 2*

*Step 3*

**Step 4**

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## Emission verification and final reporting( Step 4 ~ Step 5)

- ◆ **Participant ask** the third party verification by the verifier
  - Desk Review and Spot Check
- ◆ **Verifier** submits the verification result to the participant and CA for the participant to re-calculate the emissions
- ◆ Participant re-calculate according to the verification result and submit the report to the CA

# I . MRV Mechanism in the ETS

**Step 1**

**Step 2**

**Step 3**

**Step 4**

**Step 5**

**Step 6**

*Reporting  
Monitoring plan*

*Reviewing,  
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*Calculating,  
Reporting*

*Emissions  
verification*

*Re-calculating  
Final reporting*

*Emissions  
certification*

## Emission Certification ( Step 6)

- ◆ CA reviews verification and re-calculation report
- ◆ Deliberated, certified emissions are announced to the participant
- ◆ Participant can raise an objection about certificated emissions, and CA can reconcile the objection



Emission certification : A procedure that the CA finalize the participant's GHG emissions which the third party verified

## II. Monitoring Guideline

### 1. Classified the Emission Sources

<b>Emission Source</b>	<b>Activities involved</b>
<b>Direct emissions from stationary combustion</b>	<b>Combustion of fossil fuels, such as gasoline, light oil, kerosene, B-C, anthracite, bituminous coal</b>
<b>Direct emissions from mobile</b>	<b>Combustion of fossil fuels, such as gasoline, light oil, lubricant, jet oil, and LPG</b>
<b>Direct emissions caused by the chemical reactions of process</b>	<b>Use of cement, limestone, ammonia, chemical products, production of semiconductors, and so on</b>
<b>Fugitive emission due to the use of fugitive GHGs</b>	<b>Use of fugitive gases from cooling/refrigeration facilities, fire protection installation, GIS</b>
<b>Direct emissions caused by waste landfill/incineration, waste water treatment</b>	<b>CH<sub>4</sub> emitted from waste landfill, waste incineration activity, treatment of anaerobic wastewater</b>
<b>Indirect emissions caused by electricity, hot water, steam</b>	<b>Use of electricity, hot water, steam produced out of the organizational boundary</b>

## II. Monitoring Guideline

### 2. Select of the estimation methodology per each source

- ◆ Calculation – based methodology
  - ☞ Tier-1(IPCC Factor), Tier-2(National Factor) and Tier-3(Specific Factor)
- ◆ Direct Measurement – based methodology : value of measurement such as the TMS

### 3. Calculation per each source

- ◆ Direct Emission : Fuel combustion
  - GHG Emissions (tCO<sub>2</sub>e) = Fossil fuel consumption × Lower heating value × Emission factor × Global Warming Potential (GWP)
- ◆ Direct Emission : Process emission
  - GHG Emissions (tCO<sub>2</sub>e) = Activity data ( raw material/production/Waste) × Emission factor × Global Warming Potential (GWP)
- ◆ Indirect emission : Electricity, thermal and so on
  - GHG Emissions (tCO<sub>2</sub>e) = Activity data × Emission factor × GWP



## II. Monitoring Guideline

### 4. Collecting of each source emission

- ◆ Collecting of each direct and indirect emission in the participant's boundary

### 5. Excluding of low source emission

- ◆ Emission sources that release less than 10tCO<sub>2</sub>e annually
- ◆ Emission sources of which its annual emissions are less than 0.1% of the total
  - ☞ but, the selection of the low emission sources using ① and ② shall not exceed 5% of its total emissions.

### 5. Reporting and asking for the verification

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## II. Monitoring Guideline

### QC (Quality Control) : Example

- ◆ Compile and store monitoring data accurately
- ◆ Check potential errors that might happen during the process of the responsible person recoding the data directly.
- ◆ Manage the records on the source of estimation methods, lower heating values, and emission factors
- ◆ Keep and manage emission-related data for internal validation or verification by the 3rd party.
- ◆ Check if all emission sources are included within the organizational boundaries set by the participant.
- ◆ Check if the input data in each category stay consistent.

# III. Verification Guideline

Step	Content	Site
1. Identification	To identify the overview, organizational boundaries, and emission sources of the responsible party, assure the objects of estimation/reporting, and secure information on the monitoring, estimation, and QA/QC methods	Office of the verification body (workplace of the responsible party, if necessary)
2. Risk assessment	To assess sources of actual and potential errors and the associated level of risk	Office of the verification body
3. Verification plan	To determine procedures and schedules for collecting objective evidence based on the result of risk assessment, including the review of the records/documents made based on the data sampling plan, site visiting, interviewing, and the validation of emission calculation	Office of the verification body

### III. Verification Guideline

Step	Content	Site
4.Verification	To conduct verification in accordance with the developed verification plan	Office of the verification body, The site of participant
5.Verification Statement	To evaluate the collected evidence and qualify verification statement based on the evaluation result	Office of the verification body
6.Quality Management	To conduct technical review on the contents of the statement and report produced by the verification team	Office of the verification body
7.Issuance of the verification statement	To issue the verification report to the responsible party	Office of the verification body
8.Approval of the statement	To confirm the verification result after being approved by the operational group	Operational group