MRV Experience in KOREA
Implementation of TMS and preparing ETS

GHG Management T/F
Ministry of Environment Republic of Korea
Contents

1. Target Management Scheme
2. Emission Trading Scheme (Revolving around MRV)
3. MRV Experiences
1. Target Management Scheme (TMS)

- **TMS coverage**
  - 67% of total GHG emissions
  - 577 CO\(_2\)eq (unit: million ton)

- **Launched in 2010**
  - Legally based on “Framework Act on low carbon, green growth”
  - To set target of each corporation
  - To set infrastructure of the ETS

- **TMS covers 67% of total GHG emissions**
- **608 entities designated at the end of 2013**

<table>
<thead>
<tr>
<th>Sector</th>
<th>GHG Emission Criteria (CO(_2)eq)</th>
<th>Energy Consumption Criteria (terajoules)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power/Industry</td>
<td>416 (546 CO(_2)eq)</td>
<td>500</td>
</tr>
<tr>
<td>Agriculture / Livestock</td>
<td>76 (10 CO(_2)eq)</td>
<td>100</td>
</tr>
<tr>
<td>Buildings / Transportation</td>
<td>69 (9 CO(_2)eq)</td>
<td>350</td>
</tr>
<tr>
<td>Waste facilities</td>
<td>47 (12 CO(_2)eq)</td>
<td>200</td>
</tr>
</tbody>
</table>

- **Designation criteria**

  - GHG emission criteria (CO\(_2\)e T)
  - Energy consumption criteria (terajoules)
1. Target Management Scheme (TMS)

- *MOE* : Waste  
- *MOTIE* : Energy, Manufacturing, Industry  
- *MLT* : Building, Transportation  
- *MIFFAT* : Food

**Institutional Arrangement of TMS**

- 4 government agencies are responsible for managing given sector under TMS

- **MOE (Coordinator)**
  - Standards & guidelines
  - Certification of VB
  - Supervising of CA, VB
  - Conduct survey on entities if needed

- **RM (Implementation)**
  - Target setting
  - Check compliance report
  - Enforcement to the non-compliance

- **GIR(Registry)**
  - Research & analysis
  - Sectoral GHG target

*RM* : Relevant Ministries
*IR* : Inventory report, *MP* : Monitoring plan
*CR* : Compliance report
*VB* : Verification body
1. Target Management Scheme (TMS)

**Similarities to ETS**
- Measurement, Reporting and Verification (MRV) Process
- Cap Setting Process

**Limitations**
- NO tradable emission permits
- NO flexibility (Banking/Borrowing)
- NO proportional penalty (only fixed penalty)
- Hard to make decision for 4 other CAs
- No verification of MP

• Led to the legislation of the “Greenhouse Gas Emission Permit Allocation and Trade Act” (Bipartisan support in the National Assembly)
2. ETS (Key processes and legal plans)

- ETS is Based on “Greenhouse Gas Emission Permit Allocation, Trade Act” and “Report, Certification Regulations”
- Entities in TMS can be ETS entities according to base year emission on Annual Emission Report of TMS

Timeline

<table>
<thead>
<tr>
<th>Application TMS 2010</th>
<th>Application TMS 2012</th>
<th>Application TMS 2014</th>
<th>Application ETS 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,000 tCO₂</td>
<td>20,000 tCO₂</td>
<td>15,000 tCO₂</td>
<td>25,000 tCO₂</td>
</tr>
<tr>
<td>480 entities</td>
<td>580 entities</td>
<td>700-800 entities</td>
<td>500 entities</td>
</tr>
</tbody>
</table>
## 2. ETS (Key processes and legal plans)

<table>
<thead>
<tr>
<th>Basic Plan</th>
<th>Allocation Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 10 year plan</td>
<td>• Every phase (3~5 yrs)</td>
</tr>
<tr>
<td>• Every 5 years</td>
<td>• Ministry of Environment</td>
</tr>
<tr>
<td>• Ministry of Strategy and Finance</td>
<td>• ETS cap, Cap for each sector, Allocation methodology,</td>
</tr>
<tr>
<td>• Policy direction for ETS, BAU forecast, economic impact assessment, etc.</td>
<td>• Checked by the Allocation Committee</td>
</tr>
</tbody>
</table>

- **Basic Plan**
- **Allocation Plan**
2. ETS (Institutional Arrangement)

The Minister Of Strategy and Finance
- Establishing the Basic Plan
- Managing the National Allocation Committee

The Ministry of Environment
- Competent Authority
- Establish the National Allocation Plan (NAP)

The Allocation Review Committee

The certification Committee
2. ETS (MRV Institutional Arrangement)

- MOE (Competent authority)
  - Standards & guidelines
  - Certification of VB
  - Conduct survey on entities if needed

- KECO (MP Check institution)
  - Checks MP

- KECO, FACT, KEMCO, TS
  (IR check institution)
  - Check AER
  - Establish draft for certification

- GIR (Registry)
  - Research & analysis of MR

- Verification Body
  - Verify MP on site and AER

* AF : Allocation Form
* AER : Annual Emissions Report
* MP : Monitoring Plan
* VB : Verification Body

- * KECO : Korea Environment Corporation
- * FACT : Foundation of Agri, Tech, Commercialization & Transfer
- * KEMO : Korea Energy Management Corporation
- * TS : Korea Transportation Safety Authority
2. ETS (Standard of allocating entities)

- Entity level is prior to the factory level
- Entities in TMS can be ETS entities
- Remaining Entities in TMS are still under control
2. ETS (compliance cycle)

- ETS Law
- Monitoring plan
- Checking
- MOE
- Conformity Assessment
- Submission of AER
- Monitoring Throughout Trading period
- Annual emission report
- Verification
2. ETS (Procedure of Monitoring plan)

• **Monitoring plan consists of..**
  - Information on entities
  - process chart, GHG flow chart, Energy flow chart
  - Plans for tier level, development of tier3
  - Ways of measuring activity data
  - Ways of monitoring installation(including new installation)
  - QA/QC, etc..

• **Monitoring plan is..**
  - Submitted by October 31\textsuperscript{st} before trading period for preliminarily checking
  - Changeable when entities want to update MP for important matters

• **Annual emission report including MP is..**
  - Submitted by March (through third party of verification)
  - Checked based on how well abide by the compliance and MP by Conformity Assessment Institutions
  - Confirmed by Certification Committee
Minimum requirement of estimation (Tier) is based on the type of categories and size of installation:

- Group A: <50ktCO₂eq (installation level)
- Group B: <500ktCO₂eq
- Group C: ≥500ktCO₂eq

### Tier (estimation level)

<table>
<thead>
<tr>
<th>Tier</th>
<th>Activity uncertainty</th>
<th>Emission Factor</th>
<th>Lower Heating Value</th>
<th>reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>&lt; ±7.5%</td>
<td>2006 IPCC default</td>
<td>2006 IPCC default</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Tier 2</td>
<td>&lt; ±5.0%</td>
<td>Country specific</td>
<td>Country specific</td>
<td></td>
</tr>
<tr>
<td>Tier 3</td>
<td>&lt; ±2.5%</td>
<td>Installation specific</td>
<td>Installation specific</td>
<td></td>
</tr>
<tr>
<td>Tier 4</td>
<td></td>
<td>Continuous Emissions Monitoring (CEM)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. ETS & TMS (Inventory categories)

- **Stationary Combustion**
  1. Solid fuel  
  2. Liquid fuel  
  3. Gaseous fuel

- **Mobile Combustion**
  1. Aviation  
  2. Road  
  3. Maritime transport  
  4. Railway

- **Fugitive emissions**
  1. Coal mining  
  2. Oil & natural gas system

- **Process emissions**
  1. Cement  
  2. Lime  
  3. Other uses of carbonates  
  4. Ammonia  
  5. Adipic acid  
  6. Nitric acid  
  7. Carbides  
  8. Soda ash  
  9. Refinery  
  10. Petro-chemical  
  11. F-gas production & consumption  
  12. Iron  
  13. Ferroalloy  
  14. Non-ferrous metal (Lead)  
  15. Zinc  
  16. Electronics (etching, CVD)  
  17. Substitutes of ODS  
  18. Phosphoric acid  
  19. Caprolactam  
  20. Magnesium  
  21. Fuel cell

- **Waste disposal**
  1. Landfill  
  2. Biological disposal  
  3. Incineration  
  4. Waste water treatment

- **Indirect emission**
  1. Electricity  
  2. Steam & heat
3. Experience

• 4 different competent authorities → only one competent authority
• Monitoring plan with no verification → Consolidating Monitoring plan with related document and verification
• System, emission, entities in TMS are linked to ETS
<Key Matter of MRV>

• What are the ways of preventing windfall profit and loss while improving MRV continually?
Thank you

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