Linking-Perspective of a National/Regional ETS in China

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1. Status of GHG MRV in China
2. Policy Objective
3. Key features of methodologies
4. Issues in the Linking perspective
1. Status of GHG MRV in China

Two dimensions of GHG MRV program

National level

• Guidelines development: 10 sectors finished; 8 + 4 in progress
• Governmental notice released to commence GHG M&R; some progress on the local level
• 1 national reporting system + N provincial reporting systems

Pilot Level

• Essential part of pilot carbon market
• All pilots have published GHG M&R guidelines
• Some pilots have published the verification guidelines
• All pilots have completed GHG M&R for the historical emissions
• Most pilots completed the first compliance cycle
1. M&R Guidelines at National Level

On 15th. Oct. 2013, first batch of national M&R guidelines were released.

8+4 in progress:
- Mining
- Transportation
- General
- Machinery and Electronics
- Food, beverage, tobacco
- Building
- Non-ferrous metal (general)
- Paper and pulp
- Oil & Natural gas production
- Coal production
- Coking
- Petro-Chemical

On 13th. Jan. 2014, the government released the Notice on the commencement of GHG M&R:

- Reporting entity: Legal entity
- Base year: 2010
- Threshold: GHG above 13000 or Comprehensive energy consumption above 5000 tons of coal equivalent
- Reporting basis: National M&R guidelines
1. M&R Guidelines at Pilot Level

Shenzhen : 6/11/2012, Specification with guidance for quantification and reporting of the organization's greenhouse gas emissions

Shanghai : 11/12/2012, Guideline on M&R of GHG emissions in Shanghai (trial)

Beijing : 22/11/2013, Guideline on M&R of GHG emissions in Beijing (version 2013)

Tianjin : 24/12/2013, Guideline on the reporting of GHG emissions in Tianjin (trial)

Guangdong : 18/03/2014, General reporting rules on the GHG emissions in Guangdong Province

Chongqing : 28/05/2014, Guideline on the M&R of GHG emissions in industrial enterprises in Chongqing (trial)

Hubei : 18/07/2014, Guideline on the Monitoring, Quantification and reporting of GHG emissions in industrial enterprises in Hubei Province (trial)
2. Policy objective

- Fully understand entity-level GHG emission status
- Prepare for the upcoming National Carbon Market

National Scheme

- Essential element of Carbon Market
- Fundamental to emission M&R, allowance allocation, benchmark design, etc.

Pilot Scheme
3. Key Features of Methodologies

- **GHG types**
  - Gas type: CO$_2$/CH$_4$/N$_2$O/HFCs/PFCs/SF$_6$

- **Boundary**
  - **Accounting boundary**: Legal Person; Production and operating activities
  - **Emission sources**: Fossil fuel combustion; Process emission; waste management; Emissions from electricity and heat purchase

- **Quantification Methodology**
  - **Calculation-based** Standard method & Mass balance method
3. Key Features of Methodologies

National Scheme

- **In Common:**
  - Fossil Fuel Combustion
  - Electricity and heat (purchased) consumption
  \[ E = \sum AD \times EF \]

- **Parameters:**
  - Default for most parameters
  - Except for certain sector (e.g. NCV, carbon content, oxidation factors for power generation)
# 3. Key Features of Methodologies

## National Scheme-other emission sources

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard method</th>
<th>Mass balance method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power generation</strong></td>
<td>Desulfurization</td>
<td></td>
</tr>
<tr>
<td><strong>Power T&amp;D</strong></td>
<td>Power loss</td>
<td>SF6 equipment maintenance and retirement</td>
</tr>
<tr>
<td><strong>Iron and steel</strong></td>
<td>Carbonate decomposition; Electrode consumption</td>
<td>Process emissions: Iron &amp; steel production</td>
</tr>
<tr>
<td><strong>Chemical engineering</strong></td>
<td>Carbonate decomposition; Nitric and adipic acid production; CO2 recycle</td>
<td>Process emissions: Fossil fuel and hydrocarbon as raw material in complex process</td>
</tr>
<tr>
<td><strong>Electrolytic aluminum</strong></td>
<td>Electrode consumption; Anode effect; Carbonate decomposition</td>
<td></td>
</tr>
</tbody>
</table>
### 3. Key Features of Methodologies

#### National Scheme-other emission sources

<table>
<thead>
<tr>
<th></th>
<th>Standard method</th>
<th>Mass balance method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Magnesium</strong></td>
<td>Ferrosilicon production; Carbonate decomposition</td>
<td>-</td>
</tr>
<tr>
<td><strong>Flat glass</strong></td>
<td>Carbonate decomposition</td>
<td>-</td>
</tr>
<tr>
<td><strong>Cement</strong></td>
<td>Carbonate decomposition; Calcination of carbon in coal refuse</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ceramics</strong></td>
<td>Carbonate decomposition</td>
<td>-</td>
</tr>
<tr>
<td><strong>Civil aviation</strong></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
3. Key Features of Methodologies

Pilot Scheme

• GHG types
  – Shenzhen & Chongqing: CO$_2$/CH$_4$/N$_2$O/HFCs/PFCs/SF$_6$
  – Other pilots: CO$_2$

• Boundary
  – **Accounting boundary:** Legal Person; Production and operating activities
  – **Emission sources:** Fossil fuel combustion; Process emission; waste management; Emissions from electricity and heat purchase

• Quantification Methodology
  – Calculation-based and measurement-based
## 3. Key Features of Methodologies

### Pilot Scheme

#### Emission sources:

<table>
<thead>
<tr>
<th>Direct emission</th>
<th>Common</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion (stationary)</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>Combustion (mobile)</td>
<td></td>
<td>BJ, GD</td>
</tr>
<tr>
<td>Process</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>Waste treatment</td>
<td></td>
<td>TJ, SZ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect emission</th>
<th>Common</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>All</td>
<td>BJ, HB</td>
</tr>
<tr>
<td>Heat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Key Features of Methodologies

Pilot Scheme

Methodology:

Calculation-based
- All pilots

Measurement-based
- Beijing, Shanghai, Hubei
- Guangdong, Shenzhen
## 3. Key Features of Methodologies

### Pilot Scheme - Data quality

<table>
<thead>
<tr>
<th>Fixed requirement (except SZ)</th>
<th>Tier approach (Shenzhen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Activity data</td>
<td>• Similar to the EU ETS</td>
</tr>
<tr>
<td>– Derived from statistics data</td>
<td>• Set out data tiers</td>
</tr>
<tr>
<td>• Emission factor</td>
<td>• Prioritize higher level</td>
</tr>
<tr>
<td>– Measure (mandatory for some sector)</td>
<td></td>
</tr>
<tr>
<td>– Default</td>
<td></td>
</tr>
<tr>
<td>• Indirect emission data</td>
<td></td>
</tr>
<tr>
<td>– Activity data: statistics data/Invoice/receipt</td>
<td></td>
</tr>
<tr>
<td>– Emission factor: default</td>
<td></td>
</tr>
</tbody>
</table>
4. Issues in the Linking perspective

- **GHG types**
  - $\text{CO}_2/\text{CH}_4/\text{N}_2\text{O}/\text{HFCs}/\text{PFCs}/\text{SF}_6$

- **Accounting boundary**
  - Legal person

- **Accounting methodology**
  - Calculation-based only or including measurement-based?
  - Sector specific accounting methodology, i.e., the chemical engineering, there are some differences
  - Different requirements for the activity data as well as emission factors

- **Monitoring plan**

- **Uncertainty analysis**
Thanks for your attention

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