THE 2018 CHINA CARBON PRICING SURVEY
ROUNDTABLE ON MONITORING, REPORTING, AND VERIFICATION IN THE ELECTRICITY GENERATION SECTOR
SUMMARY OF DISCUSSION

INTRODUCTION

On December 19th, 2017, China Carbon Forum (CCF) together with ICF, convened a roundtable of the ETS Industry Expert Panel in Beijing, which will help to inform the development of China's national ETS. The panel was established to support the 2017 China Carbon Pricing Survey project, and continues to inform the 2018 China Carbon Pricing Survey, which is sponsored by the Embassy of the Federal Republic of Germany and the Royal Norwegian Embassy, and is jointly implemented by CCF and ICF, together with support from Tsinghua University China Carbon Market Center, Sinocarbon, and the Norwegian Environment Agency.

The roundtable focused on the topic of Monitoring, Reporting, and Verification (MRV) in the power sector under the national emissions trading scheme, and involved senior experts and stakeholders in China's national ETS. Participants included representatives from: the National Centre for Climate Change Strategy and International Cooperation (NCSC); Energy Research Institute (ERI); industry representatives from China's largest state-owned power generators including China Huaneng Group, China Datang Corporation, State Power Investment Corporation (SPIC), China Guodian Corporation, and Shenhua Group Corporation; representatives from third-party verification agencies including China Quality Certification Center (CQC), China Environmental United Certification Center (CEC), and Centre Testing International Group (CTI); experts from China General Nuclear Power Group (CGN), Hebei Construction & Investment Group, Greentech, Beijing UC Energy Technology, ICIS, GreenStream China, SinoCarbon, CCF, and ICF; as well as observers from Energy Foundation, International Emissions Trading Association (IETA), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

CONCLUSIONS

- At this early stage, the steps of MRV should be implemented according to stringent standards in order to ensure the reliability of verification. This can lay the foundation for simplified verification in the future.
- As MRV involves multiple aspects of a company, including various departments and subsidiaries, companies should be encouraged to coordinate all relevant sections to jointly support MRV. In particular, for companies that have not yet participated in carbon markets, government should encourage them to require each emitting entity under the group to specify their responsible departments and corresponding managers, and managers from relevant department at headquarters should coordinate the MRV work overall.
- Improving the institutional system for MRV could involve stronger legal constraints in relation to data accuracy, including laws and regulations, guidelines and standards, and the implementation of monitoring plans (recently required nationwide by NDRC).
- Some large Chinese companies have already started piloting use of the CEMS approach used in the EU, but at this stage the technology is not yet well tailored to the Chinese context, and the costs are high for smaller companies. Efforts could be made to make internal monitoring systems more accessible to companies across China.
- There are differences between national and local MRV standards, requiring significant manpower and resources for compliance, especially for large enterprises with power plants in different provinces. Enterprises need to report data to multiple government agencies at both national and provincial levels with different requirements and standards for data collection, which naturally leads to data inconsistency. These should be harmonized as soon as possible.
- MRV of carbon emissions and MRV of energy consumption can be difficult to integrate due to different scopes and methodology. Also, while online monitoring can be used for MRV of oil and gas for energy consumption, it is difficult to apply to carbon emissions from coal, as the coal emissions factors need to come from laboratory tests. This may present challenges for smaller companies.

- The central government should strengthen the legal framework and regulation of third-party verifiers. The government currently does not have requirements for the qualifications of third-party verification agencies and lacks an effective sanction for fraud.
- Third-party verification agencies should have a high technical capacity and ability to pay. Central government agencies should improve qualification requirements to ensure reliability of verification. It should also be ensured that verification agencies do not participate in non-verification work.
- There is also a need to avoid unhealthy competition in the industry leading to the present situation where the verification price is set too low. When government agencies and companies purchase verification services, the price should fully reflect the technical value of verifiers.
- Within the context of maintaining commercial confidentiality, it may be appropriate to increase the disclosure of carbon emissions data. Coal consumption, heat value and other production data, as it relates to business secrets, should not be announced, but the disclosure of total carbon emissions data could be considered in due course.
- Currently, the decentralizing technology of blockchain does not match the centralized management of carbon market, but there is significant potential. The use of big data has been tried in some of the pilot projects, and the UNFCCC has recently begun exploring how blockchain technology can assist in ensuring the reliability of MRV globally. A great deal of research and practice is needed in order to understand how to apply them in the national carbon market. The central government should begin to explore this area.
- Capacity building is still needed at all levels of company management from grass-roots workers in specific operations, to macro-level training of group managers. More can also be learnt from international experience.

UPDATE ON MRV

During the pilot programs, the National Development and Reform Commission (NDRC) and the pilot provinces and cities gradually explored and established an effective, reasonable, and operational MRV system, focusing on three tasks: first, formulating the accounting system and methodology of major emission entities; second, developing the technical standard of verification; third, setting up a mechanism for management of verification agencies and verifiers.

Each of the seven pilot regions established its own MRV standard, which provided diverse practical experiences. According to a notice published by the NDRC on December 15th, 2017, covered entities will be required to submit monitoring plans in the future, emphasizing the importance of having strict and consistent standards for monitoring.

During the pilot period, the biggest problem for MRV was that the technical standards and management systems for verification proposed by the seven pilot regions were different. For example, some places introduced a fourth-party verification agency to conduct double checking in order to ensure data quality. This also decreased efficiency and increased costs. Additionally, it is important to make the transition from government paying for verification services to marketization.

QUESTIONS AND DISCUSSIONS

The roundtable consisted of four sessions: the role of MRV, the credibility of MRV, integration of MRV with related policies, and long-term perspectives on MRV. This report summarizes participants' key perspectives on each question.

Session 1: The Role of MRV

1. **Is MRV necessary for the power sector?**
2. **What are the verifiers' experiences in MRV for the power sector?**
3. **Which department (or division) should be engaged with MRV within a company?**

1. **MRV is necessary for the power sector to participate in the carbon market, and a clear monitoring plan is essential for MRV.**

MRV is the cornerstone of the carbon market, providing standardization for companies' data management as well as a necessary guarantee for the effectiveness, accuracy, and authenticity of data. Together, monitoring, reporting, and verification can jointly ensure a high standard of data quality. A clear and standard monitoring plan will in turn improve the efficiency of verification. Third-party verifiers can only conduct successful verification if companies have a good monitoring system.

2. **Monitoring and reporting (MR) and verification (V) can be handled separately as two components. In the future, the verification process can be simplified as appropriate, for example by means of spot checks.**

Although MRV should not be omitted, it can be progressed in various ways which are more cost-effective and efficient. Companies with high-quality data and a clear reporting process could achieve cross-checking using historical data, and their verification process can therefore be simplified. Verification agencies can judge the accuracy of submitted data and confirm it through spot checks. At this early stage, the steps of MRV should be implemented according to stringent standards in order to ensure the reliability of verification. This can lay the foundation for simplified verification in the future.

3. **As MRV involves multiple aspects of a company, it is hard to assign a single department to take charge of the work. Companies need to coordinate all relevant department to jointly support MRV.**

Generally speaking, MRV of carbon emissions requires three sets of data: (1) production and environmental data collected by the planning department; (2) power data collected by the marketing department; and (3) supporting data collected by the finance department, such as invoices. Due to the large number of departments and staff involved, a comprehensive management system should be established within the firm, requiring each emitting entity to specify their responsible departments and corresponding managers, and managers from each related department at the headquarters should coordinate the MRV work overall.

Session 2: Credibility of MRV

4. **What are the most critical technical challenges in monitoring, reporting, and verifying respectively, for the power sector?**
5. **Which level of emitter is easier for MRV: group, entity, or installation?**
6. **How can the credibility of MRV in power sector be assured?**
7. **Is it necessary to establish an internal carbon data management system?**

1. **At the current stage, the reliability and consistency of MRV data needs to be improved.**

In terms of institutional arrangements, enterprises need to report data to multiple government agencies at both national and provincial levels with different requirements and standards for data collection, which naturally leads to data inconsistency. Moreover, the lack of a clear guidance and monitoring plan makes it hard to verify data related to industry-specific manufacturing processes and production. Additionally, some data is hard to obtain directly due to technical reasons.

Improving the accuracy and consistency of MRV data can be solved by both technical and regulatory means. Having a clear monitoring plan will improve the effectiveness of monitoring process-level and product-level data. More importantly, the improvement of the MRV institutional system could strengthen the legal constraints in relation to data accuracy through different approaches, including laws and regulations, guidelines and standards, and monitoring plans. The launch of China's national carbon market will be a good opportunity to improve data quality.

In addition, the CEMS system that is used in Europe and United States can be used to improve data consistency and accuracy. Some Chinese companies have already started piloting use of the CEMS system, but at this stage the technology is not yet mature, the costs are high, and companies also need to learn more about practical experience internationally.

2. **For large groups and enterprises, establishing an internal carbon data management system could help improve the efficiency of verification, but most of the existing systems still need to be improved. At this stage, most systems are not advanced enough to simplify the process of verification.**

A well-developed carbon data management system is very necessary for enterprises with a relatively large number of affiliated emitting entities. It is helpful to managers, carbon asset management operators, and anyone who supports emissions-related work in the company. A well-developed carbon data management system can simply verification through generating emission reports in accordance with national standards, allowing emitting entities to assist third-party agencies with verification, and providing supporting evidence for verification, for example scanned invoices.

Due to the high research and development costs, establishing an internal carbon data management system may not be the most cost-effective approach for smaller enterprises. In addition, the existing management systems are often not advanced enough to simplify the process of verification.

Session 3: Integration of MRV

8. **What is the difference between national standards and sub-national standards of MRV?**
9. **Is it possible to integrate MRV of carbon emissions with MRV of energy consumption in the power sector?**

1. **There are differences between national standards and local standards. These will hopefully be harmonized as soon as possible.**

There are differences between national and local level MRV standards, requiring significant manpower and resources for compliance, especially for large enterprises with power plants in different provinces.

2. **MRV of carbon emissions and MRV of energy consumption are hard to integrate due to different scopes and methodology. The experience of energy consumption MRV can provide a good reference for the MRV of carbon emissions.**

The scope and methodology of MRV for energy consumption and carbon emissions is different. The MRV for energy consumption includes production and non-production energy consumption, while the MRV for carbon emissions does not include non-production emissions. Online monitoring can be used for MRV of oil and gas for energy consumption, but is difficult to apply to MRV for carbon emissions from coal, as the coal emissions factors need to come from laboratory tests. The MRV for energy consumption and for carbon emissions are highly correlated, as the only extra data needed for carbon emissions calculation is the unit calorific value of carbon and the carbon oxidation rate. They can therefore reference each other.

Session 4: Long-term Perspectives on MRV

10. **What management mechanism for MRV would be more effective in the long-term?** (for instance: which agency should be responsible, what should be the legal basis, and what financial resources should be made available, etc.)
11. **Is there any impact on MRV under the background of the power market reform?**
12. **Would you consider the utilisation of new technologies to improve MRV, enabling higher levels of security, privacy, transparency?** (e.g. blockchain, cloud data, or other technologies related with the Internet of Things (IOT) or "Big Data" enabling larger and more complex layers of information to be captured by an MRV system)
13. **What is your content requirement for ETS training, and what is your expectation for effective training methods?**

1. **The central government should speed up the legal framework and strengthen the management of MRV.**

The central government should strengthen the legal framework and regulation of third-party verifiers, and at the same time avoid unhealthy competition in the industry leading to the present situation where the verification price is set too low. The central government currently does not have requirements for the qualifications of third-party verification agencies and lacks an effective sanction for fraud. Third-party verification agencies should have a high technical capacity and ability to pay. Central government agencies should improve qualification requirements to ensure reliability of verification.

When formulating relevant standards at the national level, reference should be made to the experience of the pilot areas, and it should also be ensured that verification agencies do not participate in non-verification work.

When government agencies and companies purchase verification services, the price should fully reflect the technical value of verifiers.

2. **Power market reform does not have a direct impact on MRV in the short term, but it may affect the methodology of carbon emissions calculation in the future.**

As the power market reform is still at the primary stage, it will not have a real impact on MRV in the near future. In the long run, electricity trading will be more transparent due to market reforms, and therefore trading data may be used for carbon emissions verification. If the cost of carbon emissions can be fully reflected through the electricity price in the future, the calculation of carbon emissions will no longer need to include indirect emissions, which will affect the scope and methodology of MRV.

3. **Within the context of maintaining commercial confidentiality, it may be appropriate to increase the disclosure of carbon emissions data.**

Coal consumption, heat value and other production data, as it relates to business secrets, should not be announced, but the disclosure of total carbon emissions data could be considered in due course. Carbon emissions verification involves cross-checking with some basic data such as on coal consumption, and therefore there is a need to strengthen the confidentiality management of third-party verification agencies in this area.

Currently, the decentralizing technology of blockchain does not match the centralized management of carbon market. The concept and technology of the Internet of Things and big data have been tried in some of the pilot projects, but a great deal of research and practice is needed in order to understand how to apply them in the national carbon market.

4. **Capacity building is still needed at all levels of company management. More can be learnt from international experience.**

Industry's suggested training needs include: how to set up an internal data collection system and integrate it with energy consumption data; how to carry out actual transactions by simulating transactions and specific examples; the trading system and its rules; carbon accounting training, including how to keep accounts, pay fees, ensure quotas are reflected in financial statements, processing of CCER transaction proceeds, carbon asset management; how to save costs through carbon trading; how to cooperate with third-party verifiers; and quota allocation rules.

Some participants hoped to learn more about international experiences, such as the EU and the United States' use the CEMS system, how EU companies manage carbon assets, how to deal with the cost impact of carbon trading, and to be introduced to advanced foreign emissions reduction technology. The third-party verification agencies expressed the hope that they could hold regular meetings with the competent authorities to respond promptly to problems arising from the MRV work, and let the experts involved in the MRV platform established by the central government to participate in discussions with the verification agencies.

Regarding the form of training, the participating enterprises suggested different needs of capacity building depending on their current knowledge level, such as training grass-roots workers in specific operations, and macro-level training of group managers such as on macroeconomic policies and carbon market prices.