ISO 14064, International Standard for GHG Emissions Inventories and Verification

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In March 2006, the international organization for standardization (ISO) completed its four-year development of ISO 14064, a three-part international standard for GHG management activities, including the development of entity emission inventories. The development process included the involvement of over 175 experts representing 45 countries. The standards include minimum requirements for GHG inventories which provide a basic structure against which credible and consistent independent auditing can be performed. The ISO 14064 standard offers policy makers a ready foundation of best practices upon which to build a GHG reduction program. ISO 14064 offers organizational users opportunities for improved consistency, increased flexibility and decreased effort associated with voluntary GHG inventories.

This presentation will provide an overview of Part 1 of the standard and how it is used to conduct a GHG inventory. A comparison of the Part 1 against the WBCSD/WRI GHG Protocol will demonstrate how Part 1 is compatible with the GHG Protocol. It will also show the additional value that can be obtained from using these approaches together.

Part 3 of ISO14064 also provides, for the first time, a standardized process for conducting a verification of a GHG inventory or a reduction process. The presentation will include an overview of the verification process for inventories under Part 3 of the standard.

INTRODUCTION

This paper provides an overview of ISO 14064, an international standard that addresses the quantification and reporting of greenhouse gas emissions and the verification of this information. It will provide an overview of the structure of the standard and present key aspects of its design and application. ISO 14064 is a technical specification and is climate policy neutral. ISO 14064 exists as a guide for the private and public sector in developing GHG inventories for their organization as well as foundation for policy makers and program developers for initiatives to address the global environmental challenge of climate change.

BACKGROUND ON ISO 14064

ISO 14064 is a standard developed under processes of the International Standards Organization. A non-governmental organization located in Geneva, Switzerland, the International Organization for Standardization (ISO) coordinates efforts by groups of technical experts representing individual national standard institutes to develop consensus-based voluntary technical standards on variety of issues. ISO has issued over 16,000 standards including the well known ISO 9000 and ISO 14000 standard series on quality and environmental management, respectively. The objective of ISO standards is to facilitate international cooperation, especially business and trade, by facilitating communication on technical issues between industry, government, consumers, and other stakeholders and allowing consistency of products and services within and across national boundaries.

The development of ISO 14064, an addition to the ISO 14000 environmental management standard series, began in 2002. Recognizing quickly emerging interest in addressing the environmental issue posed by climate change combined with the lack of international standards for businesses to take action, a work group was formed to attempt to define how to quantify and report GHG emissions from an organization, as well as how GHG reports could be verified. A key objective of the process was to

create a technically rigorous but policy neutral product that would be applicable regardless a country's current climate change policy, especially its participation in the United Nation's Kyoto Protocol. Through a process that included continuous interaction and cooperation of national technical advisory committees consisting of 175 experts representing 45 countries and a series of international in-person negotiating meetings, a standard on these issues was developed and issued by ISO for international use in March 2006. In August 2006, ISO 14064 was also approved by the American National Standards Institute as an American National Standard.

STRUCTURE OF ISO 14064

ISO 14064 consists of three parts, each with a different technical focus. Part 1 of the standard is titled "*Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*." This part of the standard addresses conducting greenhouse gas emission inventories of organizations such as corporations using a bottom up approach to data collection, consolidation and emissions quantification.

Part 3 of the standard is titled "*Specification with guidance for the validation and verification of greenhouse gas assertions*." This part of the standard establishes a process for verification of a greenhouse gas statement, including organization inventories, regardless of whether or not the inventory was developed under Part 1. This verification process is also applicable whether the verification is being conducted by an independent third party verifier or by an organization's internal auditors.

Part 2 of the standard addresses quantification and reporting of emission reductions from project activities. Because of the different approach to emissions accounting associated with project activity relative to organizational inventories, this paper will not include discussion of ISO 14064, Part 2.

KEY ASPECTS REGARDING ISO 14064 GHG INVENTORIES

ISO 14064, Part 1 includes eight major sections with over 21 subsections discussing GHG inventory issues for organizations. At the beginning, the standard establishes and defines general GHG inventory principles of relevance, completeness, consistency, accuracy, and transparency. These principles serve to assist with both interpretation of the standard as well as general guidance for addressing issues that fall beyond the practices established by the standard.

Within the primary text, the standard identifies three key aspects for developing a greenhouse gas inventory for organization. These aspects include setting inventory boundaries, quantifying GHGs, and reporting GHGs.

Boundaries for a GHG inventory include both the organizational boundaries and the operational boundaries. Organizational boundaries refer to defining which facilities are recognized as part of organization conducting the inventory and should be included within this inventory. Two approaches to defining organizational boundaries are by control and according to equity share. Under the control approach, an organization looks at facilities where it has authority to implement either financial or operational policies, then accounts for all GHG emissions from facilities where it does have control. Under the equity share approach, the organization accounts for emissions from all facilities in which it has some equity interest (even a minority), but accounts for only a percentage of the total emissions equal to the share it has in the particular facility or sub-entity.

Operational boundaries refer to which operational activities at a facility are included in the inventory. Direct GHG emissions, or emissions that result from activities directly under an organizations control, such as combustion of fossil fuels to generate heat, are always included within the inventory. Indirect GHG emissions, or emissions that result from organization activities but are generated outside the boundaries of the organization's direct control, may or may not be included. Indirect emissions from electricity generation are always included but other indirect emissions, such as

those resulting from employee travel in non-organization owned vehicles (e.g. commercial airlines) are optionally included.

ISO 14064 Part 1 establishes a process for quantifying GHG emissions for the inventory. The first steps of this process are identification of specific emission sources within the operational boundaries as well as selection of an emissions quantification methodology applicable for the sources identified. The next steps are the collection of data required by the methodology for the source and the identification of established emission factors for the data collected. Finally, the data and the emission factors, applied consistent with the quantification methodology, are used to quantify emissions from individual emission sources. The emissions quantified for each source are then consolidated with the other sources within the operational boundaries, but ensuring that direct and indirect sources are kept separate.

With respect to GHG inventory reporting, ISO 14064 establishes that the report for each reporting period should identify the entity's organizational boundaries, the GHG emissions from individual operational categories, and the methodologies used to quantify those emissions. The report should include appropriate explanation regarding these inventory components, especially any exclusions from within the established boundaries or adjustments to the methodologies. The report should also identify what particular standards (including ISO 14064 for example) or programs the inventory was conducted consistent with and whether verification relative to these standards or programs was undertaken.

It is important to note that the key aspects for conducting a greenhouse inventory under ISO 14064 are generally consistent with, and in most cases are derived from, those identified by the broadly recognized Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard developed by the World Business Council for Sustainable Development and the World Resources Institute. The difference between these two documents is that the GHG Protocol identifies, explains, and provides options for GHG inventory best practices, while ISO 14064 establishes minimum standards for compliance with these best practices. Though different in a few minor areas, the protocol and the ISO standard are complementary documents with ISO identifying what to do and The GHG Protocol explaining how to do it and organizations developing GHG inventories, especially those that will seek independent verification, can benefit from using both the standard and the protocol as references.

KEY ASPECTS REGARDING ISO 14064 VERIFICATION

Unlike Part 1 of the ISO 14064, which refined emerging GHG inventory standards and best practices already in existence such as the WBCSD/WRI GHG Protocol, Part 3 of ISO 14064 established for the first time a process for conducting a verification of a GHG assertion, such as an organization's GHG inventory report. ISO 14064 verification process was developed using best practices derived from financial accounting techniques and environmental auditing as well as verification experiences from emerging GHG schemes and programs such the Kyoto Protocol's Clean Development Mechanism and the United Kingdom's Emission Trading Scheme.

ISO 14064 Part 3 also begins with established principles for conducting GHG verification. These principles include independence, ethical conduct, fair presentation, and due professional care. Similar to those provided for inventories, these principles are provided to generally guide the verification process as well as to assist with interpretation and addressing issues that are not addressed by the standard.

The ISO 14064 Part 3 verification establishes "fundamentals" for the verification. These fundamentals include the verification level of assurance (defined as either limited or reasonable), objectives, criteria, and scope, which all serve as points of reference regarding the expectations and level of effort required by the verification. The verification fundamentals also include definition of

materiality under the verification. The most important aspect of verification performance, materiality refers to the level of assertion accuracy sought through the verification, relative to the interests of the intended users of the assertion. A materiality threshold identifies when omissions, errors or misstatement within an assertion or the data it is based upon are considered significant or insignificant.

A GHG assertion verification under ISO 14064 includes performance of assessments in three areas: review of the GHG information system, evaluation of the GHG data, and comparison the assertion against verification criteria. Review of the GHG information system seeks to identify those areas in the system that could result in a potential misstatement occurring. Evaluation of the GHG data looks to see if such system risks did result in a misstatement occurring that affects the accuracy of the assertion. Finally, comparing the assertion against verification criteria identifies if the assertion was developed consistent with the standards or program requirements that it claimed to follow.

The ultimate objective for performing these assessments is the formation of a verification statement (or verifier's opinion) on the GHG inventory assertion. A favorable verification opinion identifies that the GHG inventory assertion is consistent with the criteria identified and contains information that would allow users to make accurate decisions based upon that assertion. Opinion may also identify inconsistencies against the identified criteria, identify qualifications regarding or limitations of the information it contains, or generally identify that the assertion may not be reliable for application to the intended user's decision-making.

APPLICATION OF ISO 14064

ISO 14064 has applications for both for the private and the public sector. For businesses, the standard provides the steps to developing an inventory that is not only able to be easily verified but can be compared to the inventories of other organizations. By using the standard as a guide, these businesses can reduce costs of conducting and verifying an inventory. Because the standard represents consensus on technical GHG inventory best practices, these businesses can also have greater confidence in the inventories that are produced and these inventories have more credibility with stakeholders.

For government entities, ISO 14064 provides a base technical structure for conducting inventories and conducting verification and this structure can form the foundation of voluntary or regulatory programs. This approach allows effort of agencies to focus on identifying additional requirements of the program to reach policy objectives.

CONCLUSIONS

ISO 14064 is an international standard for quantifying and reporting greenhouse gas emissions. Part 1 guides development of a GHG inventory that can be compared to other inventories of other organizations regardless of sector or national origin. Part 3 establishes a process for verifying GHG inventory reports. ISO 14064 is an important reference for conducting a GHG inventory for an organization. The standard can also assist governmental agencies or other program directors by providing a foundation for GHG reporting.

BIBLIOGRAPHY

ISO 14064, International Organization for Standardization, Geneva, Switzerland, 2006.

The Greenhouse Gas Protocol – A corporate reporting and accounting standard, World Business Council for Sustainable Development, Geneva, Switzerland, and World Resources Institute, Washington D.C., 2004.

KEY WORDS

Greenhouse Gases
Inventory
Verification