

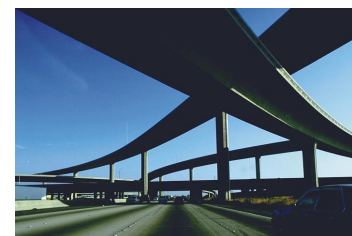
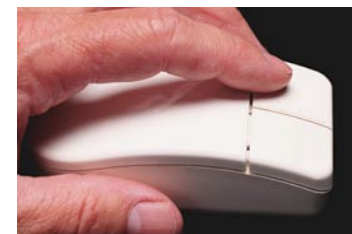
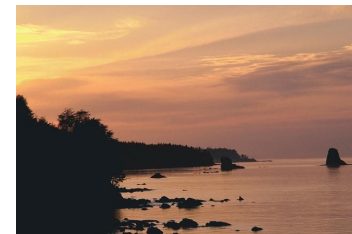


Greenhouse Gas Emission Audit /Verification

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powered by **perspective**



GHG Emission Audit and Verification Overview

- ◆ Background
- ◆ Fundamentals
- ◆ Verification of Emission Reduction Projects
- ◆ GHG Inventory Audit
- ◆ Conclusions

Background

- ◆ The Kyoto Protocol
- ◆ Audit and Verification Needs
- ◆ Definitions



The Kyoto Protocol

- ◆ **1992 – UNFCCC adopted at the Rio Earth Summit**
- ◆ **1997 – Kyoto Protocol adopted**
 - ◆ Quantified, legally binding GHG emission reduction
 - ◆ Provided 3 market based mechanisms aimed at allowing flexibility to meet targets
- ◆ **2008-2012 – First commitment period**

Audit and Verification Needs

- ◆ **Emissions Trading (ET)**
 - A robust GHG inventory is a necessity for entities to participate in ET
 - In order for GHG inventories to be deemed credible independent third party audits are required
- ◆ **Joint Implementation (JI)**
- ◆ **Clean Development Mechanism (CDM)**
 - In a “buyer beware” market environment third verification of emission reduction projects is a must
- ◆ **Corporate Reporting**
 - Government, shareholders, public, purchasers, financial institutions, other stakeholders

Audit and Verification Needs

- ◆ Audit activities related to GHG emissions fall into two main categories:
 - *Audit/Verification of corporate-wide inventories, and*
 - *Validation or Verification of emission reduction projects.*
- ◆ Both:
 - examine the accuracy and completeness of reported emissions.
 - include baseline emissions and emissions over a monitoring period.



Definitions

- ◆ Audit / Verification – the assessment of the completeness and accuracy of reported GHG emissions or emission reductions, as well as conformance with pre-established criteria.
- ◆ Validation – the process for ensuring, prior to project implementation, that it will result in the claimed emission reductions, that it contains adequate measures for monitoring and verification, and that it meets relevant program criteria.

Definitions

- ◆ Certification – the formal declaration of an independent body stating that claimed emissions or emissions reductions have been achieved.
- ◆ Accreditation – the process by which an authoritative body provides credentials to firms or individuals that conduct verification and certification activities, indicating that they have met a prescribed set of qualifications.
- ◆ Inventory – A list of an organization's GHG emissions and sources



Fundamentals

Objectives

- ◆ The objective of an **audit/verification** is for an **external party** to evaluate a **subject matter** (GHG emissions), and
- ◆ Based on the evaluation to express a **conclusion** providing the user of that information with a high, but not absolute, level of comfort about the relevance and reliability of the information.

Concepts

- ◆ There is no generally accepted **standard** available for GHG verification
- ◆ The right approach to verification is dependent on the **necessary degree of accuracy and credibility**
- ◆ The verification of GHG information draws on practices similar to both **financial** and **management system audits**

Approach

Verification typically includes:

- ◆ Evaluating the **appropriateness** of the GHG emissions inventory
- ◆ Evaluating the **data management system** for inventorying GHG emissions
- ◆ **Confirming** emissions estimates and reductions



Emission Reduction Project Verification

Fundamentals

Verifying Emission Reduction Project Requirements

- ◆ In order to generate emission reductions a project must:
 - Develop an emissions baseline
 - Develop a Measurement and Verification Protocol (MVP)
 - Quantify emission reductions

Criteria

- ◆ The verification process must confirm conformance with:
 - Project baseline and MVP
 - pre-established criteria – i.e. those criteria, defined by the buyer or certification body, that a project must meet to yield emission reductions (real, surplus, quantifiable, unique, verifiable)

Verifying Emission Reduction Projects

- ◆ Project Criteria for CDM and JI projects:
 - All projects must achieve emission reductions that would not otherwise have occurred
 - Must be approved by both countries involved
 - CDM projects must result in real, measurable, and long term benefits
 - CDM projects must contribute to the sustainable development of the host country

Verifying Emission Reduction Projects

Verification testing may include a wide variety of activities including:

- Retracing data to find omissions or transcription errors,
 - Re-computing emissions estimates to confirm engineering calculations,
 - Reviewing documents attesting to an activity, and
-
- ◆ The more data available the more rigorous the review, the more assurance verification can provide.

A stylized world map in the background, rendered in a light yellow/gold color with a halftone dot pattern. The map is centered on the Atlantic Ocean, showing the continents of North America, South America, Europe, Africa, Asia, and Australia.

GHG Inventory Audit/Verification Fundamentals

Verifying Emission Inventories

- ◆ In order to issue an opinion on an entity's GHG inventory, the auditor/verifier must answer the following on behalf of the users of the information:
- ◆ Is the information:
 - relevant
 - complete
 - accurate, and
 - comparable

Verifying Emission Inventories

- ◆ **Relevance** – refers to the appropriateness of the information being collected and reported
- ◆ **Completeness** – refers to the recording, disclosure, and classification of all significant GHG sources in accordance with applicable reporting guidelines
- ◆ **Accuracy** – refers to the likely range of deviation of a reported figure
- ◆ **Consistency** – refers to that quality of GHG information that allows users to compare data year on year
- ◆ **Transparency** – refers to factual and coherent manner of GHG information is presented

Verifying Emission Inventories

- ◆ An opinion is developed based on the interaction of the following areas:
 - Correct use of the applicable reporting and accounting “standards”
 - Materiality
 - Coverage (scope)
 - Quality of the evidence

Verifying Emission Inventories

- ◆ **Reporting and Accounting “Standards”** – No standard (IPCC Guidelines, WRI - GHG Protocol)
- ◆ **Materiality** - the extent to which GHG information may be omitted or misstated before it has the potential to change or influence the opinions or decisions made by the **users** of the verified information.
 - Omissions or misstatement can result from either an error or inherent uncertainty.
 - Users of GHG information can include shareholders, analysts, government, NGOs etc...

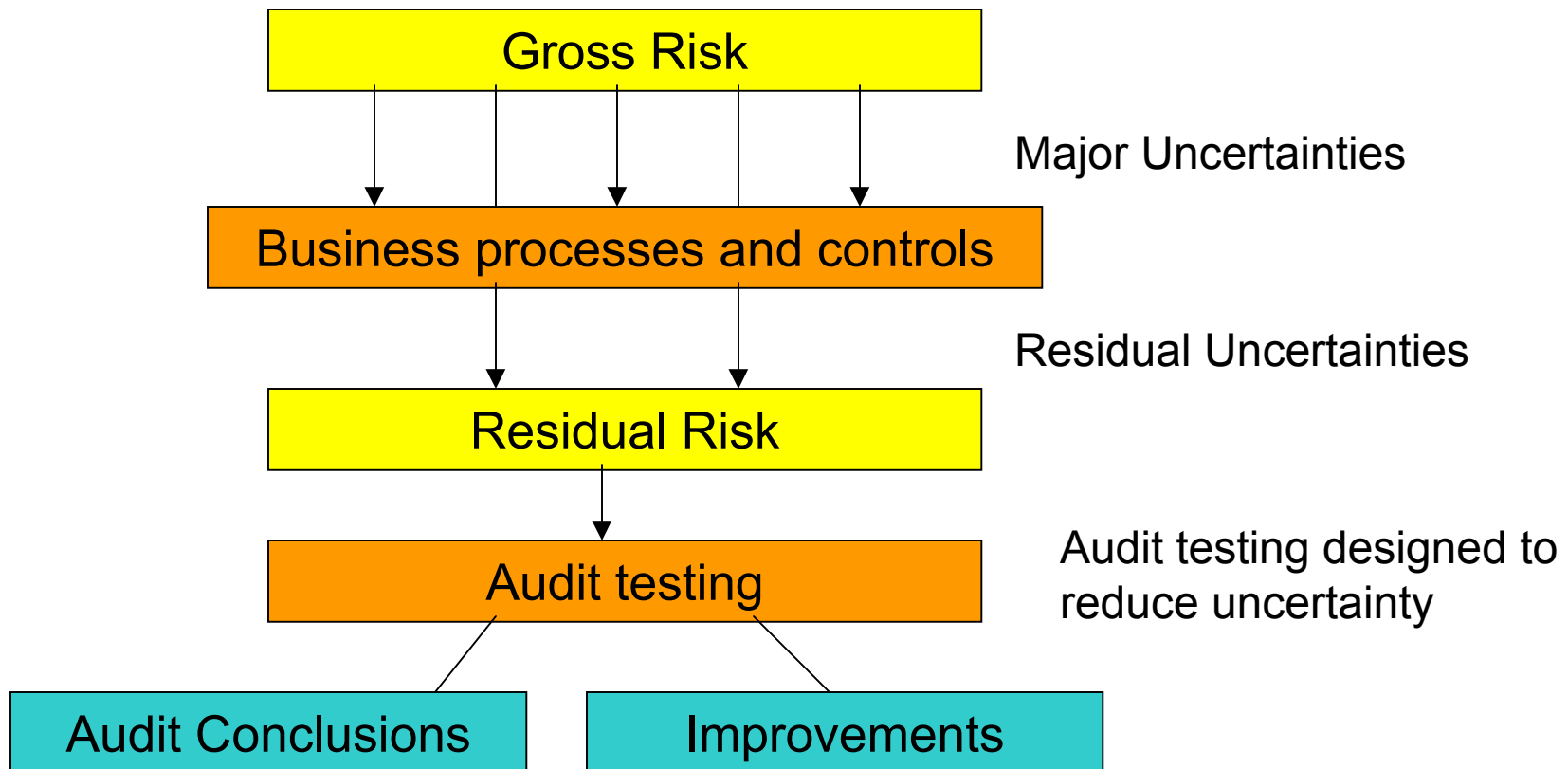
Verifying Emission Inventories

- ◆ **Coverage** - refers to the scope of work to be performed and the suitability of the underlying estimation methodologies
 - Includes boundary definitions, source coverage requirements (ex. storage, transmission and distribution), data management processes and specified calculation methods.
- ◆ **Quality of the evidence** - the auditor must obtain sufficient and appropriate evidence in arriving at conclusions upon which the audit opinion is based

Verifying Emission Inventories

- ◆ **Evidence** - includes source documents, accounting records, corroborating information from other sources
 - Sufficient and appropriate - sufficiency is the measure of **quantity** and appropriateness is the measure of **quality** of audit evidence
 - Professional judgement - in drawing conclusions the auditor does not need to examine all the information available as conclusions can be made by way of judgmental **sampling** procedures
 - Reliability - influenced by **source** and **nature** of evidence

Risk Assessment



Verifying Emission Inventories

- ◆ Areas of particular interest in the data integrity audit will include:
 - data inconsistent with expected results
 - areas where reported data could be misinterpreted
 - areas where double counting could occur
 - areas where alternative methodologies are applied
 - areas where transcription errors are likely

Verifying Emission Inventories

- ◆ At the close of the site visit an objective overview of the audit findings is presented
- ◆ The intent is to obtain the auditee's understanding and acknowledgement of the findings
- ◆ Misinterpretations will be addressed
- ◆ These findings will form the basis of the audit report

