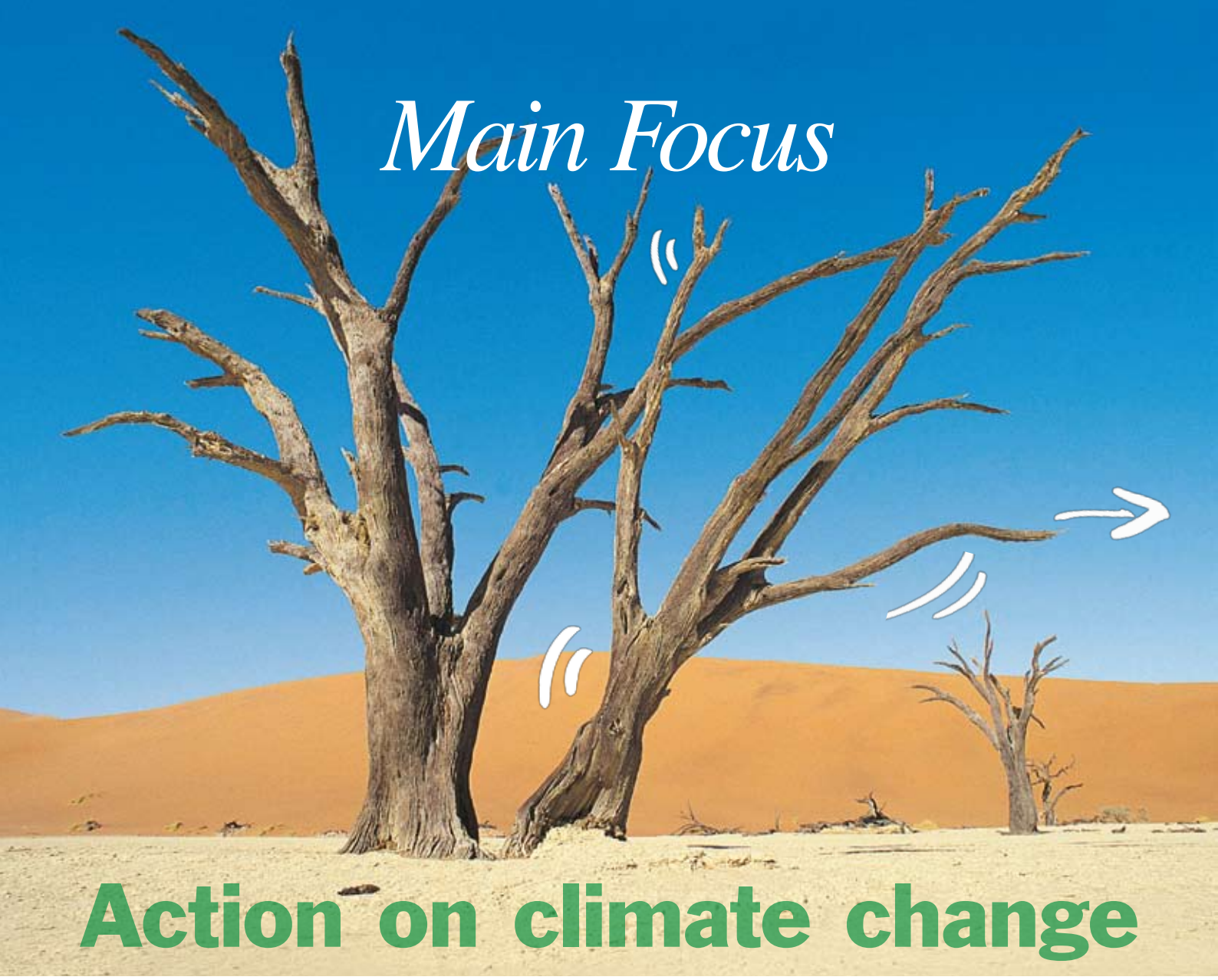

Action on climate change

Role of ISO standards in voluntary and regulated carbon markets

by Dr. Anne-Marie Warris, Technical Director, Climate Change, Lloyd's Register Quality Assurance Limited

Let us face it – standards are not considered sexy.[1)] They rarely grab the headlines or appear in ministerial speeches. Mention you are involved in developing International Standards and people's eyes glaze over, and the conversation switches to the appalling weather (or at least it does in England). On the other hand, say you are working in climate change and almost everyone has an opinion.

Put the two together and perhaps you will pique interest in the critical role standards play in ensuring that governments' and businesses' actions to tackle climate change are based on credible, real improvements that can be trusted, not just "dodgy statistics".

This article explores the critical role of International Standards developed by ISO in greenhouse gas monitoring, reporting and verification. It examines the importance of ISO International Standards in delivering credible and reliable information that the public, and voluntary and regulatory carbon markets, can rely on.

Finally, it describes the global trends in the uptake of ISO International Standards in newly emerging schemes and projects.

Climate change, carbon markets and standards

According to Tony Blair, "climate change is the greatest challenge facing the planet". The stakes are high and well-illustrated by increasingly harrowing reports from the Intergovernmental Panel on Climate Change (IPCC), the Stern Report published in 2007 and the recent discussions in Bali, Indonesia, at the Second Meeting of the Parties to the Kyoto Protocol (COP/MOP 2). As many have said, "the debate is over – it is action that is needed."

In response, governments across the globe are developing a complex array of regulations, taxes and incentives to reduce greenhouse gas emissions, many of which lie under the framework established by the Kyoto protocol.

In addition, businesses are increasingly aware of consumer desires to buy from "greener" companies. To win the "green currency" they are improving ener-

1) Except perhaps to those involved in developing and implementing them!

Quality – Most important issue in voluntary carbon markets

"Voluntary carbon markets have historically served as sources of experimentation and innovation..., as well as the markets most likely to reach poorer and smaller communities in developing countries," states the *State of the Voluntary Carbon Market 2007* report produced by Ecosystem Marketplace and New Carbon Finance.

According to this report, voluntary carbon markets are evolving rapidly. It was estimated that in 2006 the global voluntary market was worth USD 91 million. This record year is part of a developing trend. Since 2002, the number of organizations supplying carbon credits into the market has grown by 200 %, with online retailers as the fastest growing sector. The over-the-counter (OTC) voluntary offset market also grew significantly by 200 % between 2005 and 2006, and was dominated by three main types of projects: forestry sequestration (36 %), renewable energy (33 %), and industrial gases (30 %).

In fact, the combined voluntary markets (Chicago Climate Exchange and OTC) are larger than the Kyoto Protocol's Joint Implementation mechanism and the New South Wales Greenhouse Gas Abatement Scheme. This is of particular interest if we consider that voluntary markets constitute an active call from businesses and individuals to take action on climate change where direct regulation is lacking.

The report stated that businesses were the largest buyers, but contrary to what might be expected, their main motivation did not lie in a preparation for future regulation, but on a desire for corporate social responsibility and to "walk the talk" on environmental action.

The report suggested that the flexibility of voluntary markets constituted a source of both strength and weakness. Less stringent requirements result in lower transaction costs. On the other hand, a lack of widely accepted standards, certification and verification process make buyers wary of the quality of credits purchased. However, this is changing. Quality was identified as the single most important characteristic, higher than price, for buyers. Sellers realize that addressing the issue of quality will determine the future development of the market.

The report concludes: "Overall, the survey confirmed reports that the voluntary carbon markets are a vibrant and growing sector of the carbon markets, one with direct links to consumers, and one whose future (assuming issues of quality can be addressed) looks bright indeed. In fact, based on data we are beginning to receive, it is possible to predict record volumes for 2007."

gy efficiency and off-setting their emissions, with their new mantra of becoming "carbon neutral".

Together, these activities have created two main markets trading in carbon; the voluntary market (outside formal government regulation) and regulatory market (developed, implemented and enforced through regulation). Where one tonne of CO2 or CO2(e) [2] is the standard currency (referred to collectively here as CO2(e)).

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2) Carbon dioxide equivalent (CO_2(e)) is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). For example, the GWP for methane over 100 years is 21. This means that emissions of one million tonnes of methane is equivalent to emissions of 21 million metric tonnes of carbon dioxide (from **http://unfccc.int/ghg_emissions_data/items/3825.php**).

About the author

Dr. Anne-Marie Warris, Technical Director, Climate Change, Lloyd's Register Quality Assurance Limited (LRQA) is the Vice-Chair of the UK Emissions Trading Group (UK ETG). Dr. Warris is also the UK delegate to ISO/TC 207/SC 1, *Environmental management systems*, and SC 7, *Green house gas management and related activities*. She has authored, on behalf of the VCS Steering Committee, the Voluntary Carbon Standard 2007 (VCS 2007).

Within these markets there are two types of trading units:

- **allowances** – essentially one tonne of CO2(e) emitted into the air. They are required to be handed in by businesses in trading schemes such as the European Union Emissions Trading Scheme (EU ETS); and
- **credits** – one tonne of CO2(e) that has not been emitted but otherwise would have (e.g. by fitting additional abatement equipment), or has been taken up by activities such as reforestation – again, that otherwise would not have occurred, based on the country's current environmental legislation.

Any individual, organization or country emitting CO2(e) can purchase credits to "off-set" their own emissions, either as a voluntary action or because they are in a formally regulated scheme.[3] They can then claim to be "carbon neutral" if they purchase credits equal to their emissions.

As a result, carbon trading is becoming a potentially lucrative, albeit risky, business.

Financial institutions are now well aware of potentially substantial returns from projects to reduce emissions and carbon trading.

But how can we be sure those involved in these markets are really achieving the reductions, planting the trees and making the improvements they claim to be? How certain are we that the reductions are real and more than they would be under the country's current environmental legislation? And if independent verifiers are used to verify such claims, who checks that the verifiers are wholly independent and sufficiently qualified?

Gaining credibility

ISO has been developing International Standards for quantification, monitoring and reporting of GHGs since 2002, with the first ISO 14064 standard for greenhouse gas accounting and verification published in 2006. The ISO suite of standards has shaped numerous regulatory schemes in climate change and formed the cornerstone of more reputable parts of the voluntary market.

So what can ISO standards provide for carbon reduction schemes? This is discussed further below, but in summary they can go a long way towards providing the following:

- **Credibility** – because an international development process and its consensus-building approach is used in standards development;
- **Broad applicability** – standards are "regime neutral", allowing them to be used in a number of schemes and projects without bias;
- **Consistency, reproducibility and transparency** – emissions validated or verified using these standards are credible, based on consistent, reproducible and transparent processes, all of which are needed for market confidence;
- **Assurance** – the assurance standards (see ISO 14064 part 3 and ISO 14065 below) provide interested parties with the assurance that climate change claims and declarations are fairly stated. This is critical, as the research "What Assures Consumers"[4] demonstrated that 70 % of consumers want climate change claims to be independently verified.

ISO's tackles climate change

ISO has a number of standards relating to climate change, ranging from measurement of specific greenhouse gas emissions to generic accounting standards. The two most important standards for the carbon markets are discussed below.[5]

Firstly, published by ISO in 2006, ISO 14064 comprises three standards, detailing specifications and guidance for the organizational and project levels, and for validation and verification. They can be used independently, or as an integrated set of tools to meet the varied needs of GHG accounting and verification. They are:

ISO 14064-1:2006, *Greenhouse gases* – Part 1: *Specification with guidance at the organization level for the quantification and reporting of greenhouse gas emissions and removals*, specifies verifiable requirements for organizations to design, develop, maintain and report on emissions through inventories, and deals with quantifying GHG emissions through monitoring and reporting programmes.

ISO 14064-2:2006, *Greenhouse gases* – Part 2: *Specification with guidance at the project level for the quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements*, specifies verifiable requirements for GHG project proponents to plan, monitor, quantify and report on projects, including resultant GHG emission reductions or removal enhancement units. This is useful for proponents of voluntary projects, regulatory credit-based schemes and government administrators designing programs and schemes.

3) The EU ETS now allows operators in the scheme to purchase and use a certain percentage of credits as well as allowances to cover their total emissions at the end of each reporting year.

4) 'What Assures Consumers' Climate change is available at **http://businessassurance.com/what-assures-consumers/**

5) There is additional work going on throughout ISO that relates to equipment design and measurement methods which is not being covered here.

The Carbon Market solution

The World Bank (WB) Report on *State and Trends of the Carbon Market 2007* shows that in 2006, the carbon market grew to three times the size of the previous year (USD 30 billion). The market was dominated by the sale and re-sale of European Union Allowances (EUAs) at a value of nearly USD 25 billion under the EU Emissions Trading Scheme (ETS). Project-based activities increased significantly through the Clean Development Mechanism and Joint Implementation – USD 5 billion. There was also an important growth in the market for voluntary reductions by corporations and individuals.

The report states that "The carbon market and associated emerging markets for clean technology and commodities have attracted a significant response from the capital markets and from experienced investors, including those in the United States. The most promising impact of carbon markets has been its impact on innovation as smart capital takes an early, long-term bet on the quickly growing emerging market for environmentally-oriented investment."

According to the report, carbon mitigation efforts are proliferating in both regulated and unregulated sectors. In the former, emissions trading constitutes an efficient solution for meeting a given level of emission caps, if an appropriate price is set. Policymakers should set caps that are consistent with their goal of environmental performance. The latter should be a scientifically objective target, while at the same time offering companies a maximum flexibility to attain these goals. A clear economic outlook should be provided, as well as baseline carbon intensity improvements. Information on market-relevant emissions data should be made available in a regular and transparent manner. Moreover, the penalties and their application for fraud and non-compliance should be strict and consistent. The report emphasizes that the key elements for a performing carbon market include: competitive energy markets; common, fungible units of measure; standardized reporting protocols of emissions data; and transferability of assets across boundaries.

According to the WB however, despite their high-potential, carbon markets lack a generally acceptable standard. This, the WB believes, can constitute a significant risk to their reputation and offset projects in general.

The report states: "The enormity of the climate challenge, however, will require a profound transformation, including in those sectors that 'cap-and-trade' markets cannot easily reach. These include making public and private investments in research and development for new technology development and diffusion, economic and fiscal policy changes, programmatic approaches to decouple economic growth from emissions development as well as the removal of distortionary subsidies for high-carbon fuels and technologies."

ISO 14064-3:2006, *Greenhouse gases* – Part 3: *Specification with guidance for the validation and verification of greenhouse gas assertions*, specifies verifiable requirements for validation/verification bodies and validators/verifiers in providing assurance of GHG claims from organizations using Parts 1 and 2 of the standard. The Part 3 standard aims to be applicable to any GHG scheme and will be of interest to validation/verification bodies, validators/verifiers and GHG scheme administrators.

"The voluntary market is thriving where the regulatory market has yet to become firmly established."

Secondly, there is ISO 14065:2007, *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition.*[6] This standard establishes the requirements that allow accreditation bodies and others to assess the processes used, and credibility of, GHG verifiers and validators.

When developing these standards, ISO's priority was to ensure that they can be applied across different programmes – voluntary and regulatory – around the globe and are not limited in their application (i.e. they are "regime neutral"). In this way, they aim to have broader appeal and will create consistent requirements, irrespective of the country in which the project or industry is located.

Supporting the global carbon market

In this next section, I will discuss how ISO standards are supporting the development of the voluntary carbon market (corporate reporting, credits and carbon foot printing), as well as the regulated market (mainly through emissions trading).

6) First published in 2007.

Voluntary markets

Voluntary emissions reporting is widely used where organizations are not required by legislation to report emissions, but do so out of choice through corporate social responsibility (CSR) reports and to demonstrate progress towards any emission reduction targets.

As discussed above, businesses can then take the next step and "off-set" any remaining emissions by purchasing credits in the voluntary markets – essentially investing in reduction projects that are not regulated under formal government or Kyoto schemes, or they can choose to purchase credits from regulated markets (see below).

The voluntary market is thriving where the regulatory market has yet to become firmly established, such as in the US, which has 68 % of the current customers (understandably, as the US has not signed the Kyoto Protocol).

But within a voluntary market that is not under the scrutiny of any government body, how can buyers trust those claiming to make emission reductions? Recent criticisms of some projects have pushed buyers to seek credits from project proponents that can prove their emission reductions based on recognized standards.

One of the ways to do this is for project proponents to follow the ISO GHG accounting standard (ISO 14064). The value of this standard was demonstrated when the founders of the Voluntary Carbon Standard (VCS 2007) requested its inclusion into their standard to ensure rigorous and credible accounting, and to maintain integrity in the market. The next step is then to have the emission reductions or inventories verified or validated (if it relates to projected emission reductions associated with a project) in accordance with ISO 14064 part 3 using a validation or verification body accredited to ISO14065.

The accreditation standard (ISO 14065) is also used by the VCS 2007 as the standard for verifiers responsible for certifying emission reductions claimed by project proponents. In the future, it is also likely to be used as the accreditation standard for the US voluntary Climate Action Register.

ISO 14064 is increasingly being used to declare product "carbon footprints", although other standards, such as those for lifecycle analysis (ISO 14040 series) and labelling (ISO 14020 series), should also be followed. Issues with reporting carbon footprints were highlighted during debates in Bali at COP/MOP over who should pay the emission price for the footprints of goods manufactured in China and sold in developed countries.

Intriguingly, use of ISO 14064 is also growing in Asia and Africa, both of which are covered by the Kyoto Protocol's Clean Development Mechanism (CDM). Here, the standard is mainly used by organizations to report on their GHG inventories as separate from CDM projects.[7] Asia is well ahead here compared to the rest of world as it also was in leading the way in accredited certification to the environmental management system standard (ISO14001:2004).

Regulatory markets

The thinking and concepts of the developing GHG accounting standard (ISO 14064) were taken into account in developing the monitoring and reporting requirements for regulatory schemes such as the EU ETS that commenced in 2005. A comparison done in 2006 between the ISO standard and EU ETS monitoring and reporting requirements (MRV Guidelines)[8] found that there are a number of areas where ISO common processes had been applied, but the EU ETS requires some additional, sector-specific monitoring by operators.

Verification of monitoring and emission results by independent, accredited verifiers is a fundamental feature of trading needed to ensure trust in the reported emissions.

The financial stakes are high in Phase II of the EU ETS, with allowances currently trading at around EUR 22 (January 2008) and penalties for under-reporting increasing to EUR 100 per tonne/allowance. Any errors in monitoring and/or calculations could have serious financial consequences. The need for reliable verification and correction of any errors is therefore more important than ever.

Applying ISO 14065 will help to ensure that the verifiers employ the correct processes and have the right qualifications for the job. ISO 14065 is increasingly used by EU ETS accreditation bodies as the accreditation standard in member states. The review of the EU ETS Directive by the European Commission for Phase III will also examine the further application of ISO 14065 in EU ETS verification and accreditation.

In the medium term, I can foresee this standard influencing developments in accreditation under the United Nation Framework Convention for Climate Change (UNFCCC), specifically the CDM and Joint Implementation (JI). It is also likely to be called up by other regulated programmes for their accreditation such as US California Climate Action Register and the emerging Australian emission trading programme.

A bright forecast

Over the next few years, it will be exciting and interesting for those of us involved in developing standards to see just how widely they are taken up by other schemes and regulations, either visibly or invisibly. Hopefully, scheme designers will recognize the considerable effort and scrutiny that goes into their development and see the value in applying them, either in part or with additional requirements, without having to "re-invent the wheel".

Standards play an often unrecognized, but extremely valuable, role in harmonizing global approaches, hopefully making life easier for all of us involved. Most critically, however, their correct use should assure us all that reductions are real and humans are truly making progress towards tackling climate change.

For further information on the VCS, please visit **www.businessassurance.com/vcs** *or* **www.v-c-s.org**

International Standards can be purchased from: **http://www.iso.org/iso/iso_catalogue**

7) CDM is about project-based accounting, not organizational accounting ; therefore, additional reporting is required to cover the total emissions from an organization as a whole.

8) See IETA GHG Market 2006 – Moving to Action, Dr. Anne-Marie Warris, "ISO14064 Greenhouse Gas International Standards Comparison with EU ETS Requirements".