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Greenhouse Gasses and the Accountancy Profession

Climate change

With fossil energy such as oil, coal and natural gas, humans move carbon from one part of the global ecosystem to another. Carbon, extracted from natural resources where it was stocked for millions of years, is burned into carbon dioxide (CO_2) and released into the atmosphere. This emission causes an increase in the so-called 'greenhouse effect' in which the radiant heat from the sun reflects within our atmosphere. This will lead to a gradual rise of the temperature on Earth. This climate change affects nature, agriculture and the rise of the sea level by melting the glaciers and the ice caps of the South Pole. It may lead to a loss of land on which to live and to produce food, and a lost of biodiversity.

There is an urgent need to reduce the emissions of CO_2. Although CO_2 is the first gas for which measures will be taken, other gasses share similar global warming properties such as methane, nitrous oxide (N_2O), hydro fluorocarbons, per fluorocarbons and sulphur hexafluoride.

Kyoto Protocol and its mechanisms

In 1992 governments adopted the United Nations Framework Convention on Climate Change (UNFCCC) and started a process of discussion and information exchange on the causes and responses to climate change. A series of Conferences of the Parties (COP) have taken place since. COP-3 was hosted in Kyoto, and at this event a Protocol was adopted under which industrialised countries agreed to reduce the combined emission of greenhouse gasses by at least 5% (compared with 1990 levels) in the period 2008-2012.

There are three market mechanisms (financial instruments) designed for this reduction:

- Emissions Trading (ET): an emission reduction gives a 'credit' which can be sold on an exchange or a market;
- Joint Implementation (JI): a developed nation invests in a GHG reduction project in another developed nation;
- Clean Development Mechanism (CDM): a developed nation invests in a GHG reduction project in a developing nation.

The ratification of the Kyoto Protocol is still in progress.

Benefits of using these financial instruments may arise from the cost effective allocation of technical improvements in investment projects. For each project there should be a decision in the 'ex ante' stage: what is the best technology and how large is the reduction to be expected (targets). This is called a baseline report. These projects should also be judged for their economy (management accounting) and adequacy of the internal systems for measuring, accounting and reporting.

As soon as a project is in operation, a yearly report should be produced with the factual emission of CO_2 and the realized reduction. A shortage or a surplus will lead to material financial consequence. All three mechanisms rely on financial instruments for which new infrastructures shall be developed, such as a trading system and a market. Depending on the facilities for speculation and banking, risks may even surpass the basic risk of non-compliance of existing contracts. Even derivates may arise as a financial instrument.

Baseline validation (ex ante)

In order to avoid technical or financial failures, a project should be judged by an independent party before a contract will be signed or an approval granted by a government. This judgement should consist of a technical review, a review of the investment appraisal and the liquidity prognosis, and an audit of the adequacy of the internal accounting and control systems. The expertise for this validation comes from different disciplines, and includes the techniques of management accounting and accountancy.

Accounting and reporting the factual emissions (ex post)

In order to get insight to the accuracy and completeness of the real emissions, a series of activities should be organised, starting from measurement in accordance with rules of the agreed mechanisms, via an accounting system with proper internal controls, and concluding with reporting according to an agreed format. Next to this, the financial consequences should be valued , registered and presented as a true and fair component of the annual accounts of all parties involved.

Measuring

For CO_2, two basic methods can be used for measuring the real emissions: direct and indirect. Direct measuring is a technical sampling at the emission points of an installation. The year load can be calculated by multiplying the samples by the production periods. This methodology is marked for its wide tolerances and will not be used. Indirect measuring is based on

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calculations of the fuel inputs. Depending on the type of fuel, different carbon fractions can be measured and calculated in relation to the energy produced. This method is more precise, not only for the technical calculation but also for the possible measures of internal control.

Accounting

Accounting is the process of refining factual data into usable information. Factual data normally are not fit for interpretation. Information can give insight for persons with responsibilities in judgment, controlling, reporting and rendering accounts. In order to guarantee the quality of information it should be based on accounting principles, such as relevance, completeness, consistency, transparency, and accuracy. Accountants and controllers working in industry are responsible for this quality and they implement management information systems with proper internal controls. Because of the high financial risks these controls should meet the same criteria as other financial topics.

Emissions report

The emissions report of a company that is subject to the GHG mechanisms, presents at a high level of aggregation, a yearly CO_2-equivalent of the discharges of greenhouse gasses, maybe with a few specifications and the financial value. Because of the large financial consequences, this information should be very precise.

Annual report

Because of the financial consequences, the CO_2 performance also affects the annual accounts. Rights and obligations will be presented in the balance sheet. The costs and revenues of the emissions related with emissions trading or the existing contracts of GHG projects will be taken into the profit and loss account. These effects can be enhanced when there are facilities for trading and banking. The International Accounting Standard Board has developed standards for financial instruments (like options and derivates). The existing guidance can be used, but it may be preferable that IASB develops a more specific guidance for disclosure of the financial aspects of greenhouse gas mechanisms.

Assurance of the emissions report (ex post)

Because of the high interests in the outcome of the GHG mechanisms, only the statutory accountant* with his/her multidisciplinary teams should provide assurance on the emission report. The real emissions might have a serious impact on strategy, may have extreme financial risks and are quite material. As the verification of this report is an information audit, the assurance provider should be well educated and experienced in this type of assurance work. There is a need for a high level of assurance, which means that techniques of professional accountants must be used and that conformity assessments or a certification against a standard are not adequate. This certification does not play a role in the assurance providing process of the statutory accountant.

If we look to the approach of stand-alone verification, assurance effort should be directed to the **completeness** of the real emissions. Important, but quite straightforward, is a reasonableness check of the calculations of reported emissions (carbon balance). But this action does not guarantee a full report of the inputs and outputs (risk of balanced shortage). In practice this can be done by judging the internal control processes and by analysing the flow of finance during the year. This should be done at a detailed level.

But this work has a large overlap with the assurance audit of the annual accounts. For this reason, the assurance of emission reports by statutory accountants is cost effective. Moreover, the accountant will in any case require to verify the emissions because of their impact on the financial statements.

A recent survey by KPMG Sustainability shows that for the largest global corporations the assurance provider in 65% of the verified environmental and sustainability reports originates from one of the accountancy firms. Accountants work in multidisciplinary teams, using the International Standard on Auditing nr 620 (Using the Work of an Expert) of the International Federation of Accountants (IFAC). Individuals cannot do this type of work so we should combine expertise in law, environmental management, engineering, business administration and accountancy.

Will all two million accountants in the world perform GHG verification? Accountants work in business and government as executives, in internal audit functions and in public practice. The latter are accredited for all sectors and all types of assurance engagements, but in practice they normally operate within a specialisation. Accountants who are familiar with the sector where GHG is relevant, such as power generation, metals, paper, glass and concrete can do GHG verification. These accountants are familiar with a company's strategy, technology, processes, risks, measuring, accounting and reporting. If this accountant is able to provide assurance on the financial statements, he/she also is able to provide assurance on the underlying aspects of the business processes that will have financial impacts, using the work of an expert where necessary. Furthermore the size and sector range of companies affected by GHG measures may well increase in the future.

The international (IFAC), regional (FEE) and national institutes and other bodies (IASB, GRI) support accountants with professional expertise, such as permanent education programmes, guidance, standards and professional ethics. For special purposes assurance protocols have been developed securing a world wide consistent quality.

* In some nations this professional is called the statutory auditor.