

# Accounting Issues on Emissions Trading

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## Abstract

The Kyoto Protocol aims to stabilize global emissions of carbon dioxide (CO<sub>2</sub>) by inventing a carbon trading system. With a price on air pollution, businesses can compare the costs of buying carbon allowance permits with the costs of purchasing low CO<sub>2</sub> emission technologies. As trading items, carbon credits become the world's hottest, yet least understood commodities. The international carbon trading market was about US\$100 million total value about 10 years ago. Now it is about US\$18 billion. This paper will discuss the Kyoto Protocol and the related accounting issues relate to carbon trading.

*Keywords: Kyoto Protocol, Emissions Trading Scheme (ETS), Estonia case, carbon financial statement accounting, IFRS, US GAAP.*

## 1. Introduction

Ample scientific evidence<sup>1</sup> has created an “overwhelming consensus among leading climate scientists” that current global warming has been chiefly caused by the emission of CO<sub>2</sub> and other greenhouse gasses (GHGs) produced by human activities.<sup>2</sup> Increases in CO<sub>2</sub> emissions are a result of either nature (e.g. volcanic eruptions) or the actions of mankind (e.g. the burning of fossil fuels such as coal, oil and natural gas). In recent times the burning of fossil fuels like oil-in which CO<sub>2</sub> has been stored for millions of years - has led to unprecedented levels of greenhouse gas emissions in the atmosphere. Scientists have predicted that the emission of GHGs will continue to cause further increases in world temperatures unless substantial steps are taken to reduce the root causes of global warming.

As a result of growing concern over global warming, the international community has begun to take increasingly authoritative steps to curb GHG emissions. The first major international treaty addressing global warming, the United Nations Framework Convention on Climate Change (UNFCCC), was agreed in 1992 to impose limits on greenhouse gas emissions.<sup>3</sup> EU member nations were obligated to comply with this treaty.<sup>4</sup> However, the UNFCCC itself was nonbinding and did not impose legal obligations on any nations.

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<sup>1</sup> There has been an increase of 0.76°C in average global temperature since 1850 and a near doubling in the rate of sea level rise from 1993-2003. Also, twelve of the warmest years ever recorded have occurred since 1995. Press Release, Eur. Comm'n, Climate Change and the EU's Response (Nov. 28, 2008), available at <http://europa.eu/rapid/pressReleasesAction.do?>

<sup>2</sup> Greenhouse gases refers to “those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.” United Nations Framework Convention on Climate Change art. 1, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC].

<sup>3</sup> Id. art. 2.

<sup>4</sup> Id. art. 4.

The third session of the Conference to the UNFCCC took place in Kyoto, Japan in 1997, resulting in the Kyoto Protocol. The Kyoto commits developed countries to reduce their collective emissions of six greenhouse gases by at least 5% of 1990 levels by 2012. The UNFCCC adopted the Kyoto Protocol to correct for deficiencies in the previous treaty.<sup>5</sup> The purpose was to establish an association of member nations and bind them to make specific commitments to reduce emissions.<sup>6</sup> For example, by ratifying the Kyoto Protocol, all member nations of the European Union became obligated to reduce their GHG emissions.<sup>7</sup>

To meet their targets, member nations were permitted to take advantage of international emissions trading mechanism endorsed by the Kyoto Protocol.<sup>8</sup> The mechanism works in the following way: a member nation can emit more CO<sub>2</sub> than its assigned amount (which, is defined as being 8% above its emissions in 1990) only if it can simultaneously sequester the equivalent amount in 'allowable' carbon sinks. The most common activity of allowable carbon sinks is reforestation. The reforestation will be measured by how many new trees planted after 1990, and pre-1990 trees still existing are not considered carbon credit purposes. The main response to removing CO<sub>2</sub> from the atmosphere is to grow more forests.

Due to the possibility of trading, carbon credits become the world's hottest, yet least understood commodity. The carbon trading market internationally was about US\$100 million total value about 10 years ago. Now it is about US\$18 billion. Therefore, one of the fastest growing commodity markets in the world of any kind (Ratnatunga, 2008).

In the business level, business entities need to compare the costs of trading in carbon permits<sup>9</sup> and the cost in purchasing low CO<sub>2</sub> emission technologies.

This paper first explains why the Kyoto Protocol makes the trading of carbon credits the world's hottest, yet least understood commodity. Then it predicts that the next round Kyoto Protocol will apply to CO<sub>2</sub> emissions in shipping. Next, the paper discusses the Emissions Trading Scheme (ETS) on national level with the *Estonia* case. It follows by discussing the ETS in business level, with briefly evaluate the three ways of regulation means. Then the paper will look at Carbon Financial Statement Accounting, this section will investigate those issues such as whether emissions be seen as an asset and the three treatments thereof. The paper ends with the four US views on recording emissions rights in the financial statements. This paper concludes that market participants in the emissions trading remain confused about the appropriate accounting treatments under both the International Financial Reporting Standards ("IFRS") and generally US accepted accounting principles ("US GAAP").

## **2. Carbon Dioxide Emissions in Shipping**

CO<sub>2</sub> emissions from shipping are double those of aviation, which will have a serious impact on global warming (Vidal, 2007). For example, BP owns 50 tankers, and researchers at the Institute for Physics and Atmosphere in Wessling, Germany reveal that annual emissions from shipping range between 600 and 800m tonnes of CO<sub>2</sub>, or up to 5% of the global total. This is nearly double Britain's total emissions and more than all African countries combined.

Shipping is responsible for transporting 90% of world trade which has doubled in 25 years, and CO<sub>2</sub> emissions in shipping have risen nearly as fast in the past 20. Dr Veronika Eyring, a researcher at the Institute of Physics and Atmosphere, calculates that the global fleet used 280m tonnes of fuel in 2001 and that could reach 400m tonnes by 2020. An IMO study of greenhouse gas emissions has estimated that emissions from the global fleet would increase dramatically in the next 20 years as globalisation leads to increased demand for

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<sup>5</sup> Kyoto Protocol to the United Nations Framework on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 [hereinafter Kyoto Protocol].

<sup>6</sup> Id. art. 3.

<sup>7</sup> Council Directive 03/87, 2003 O.J. (L275) 32 (EC) [hereinafter Directive 03/87].

<sup>8</sup> Kyoto Protocol, art. 6.

<sup>9</sup> Carbon trading refers to the buying and selling of the right to emit CO<sub>2</sub>. The basic unit is one metric tonne of CO<sub>2</sub> per year.

bigger, faster ships. Without action the IMO predicts that by 2020, emissions from ships would increase up to 72%.

Although CO<sub>2</sub> emissions from ships do not come under the current Kyoto agreement, greenhouse gas emissions from ships would be a likely target in the next commitment period of the Kyoto Protocol. For example, the Norwegian government opined that there are no technical obstacles to bringing international shipping under a post-Kyoto Protocol.<sup>10</sup> Therefore, it would be beneficial for shipping managers to get themselves familiar with the emissions trading scheme under the Kyoto Protocol.

### **3. Emissions Trading Scheme (ETS)**

Some countries will be net-sequesters of CO<sub>2</sub> whilst other would be net-emitters, and a market will be developed for trading of CO<sub>2</sub> emissions where 'carbon credits' are sold by net-sequesters to net-emitters. Theoretically, if a country is incapable of meeting its target, it can buy credits (or permits) from countries that are under their targets. Non-compliance will invite a monetary penalty.

The most common type of emissions trading systems are known as „cap and trade“ schemes. Under such a scheme, the government determines limits on greenhouse gas emissions (that is, the government sets a cap) and issues tradable emissions permits up to this limit. Each permit represents the right to emit a specified quantity of greenhouse gas. Businesses must hold enough permits to cover the greenhouse gas emissions they produce each year. Permits can be bought and sold, with the price determined by the supply of and demand for permits.

By placing a price on emissions, trading allows market forces to find least-cost ways of reducing emissions by providing incentives for firms to reduce emissions where this would be cheapest, while allowing continuation of emissions where they are most costly to reduce (DPMC 2007).

The Kyoto Protocol provides the mechanism of carbon trading known as International Emission Trading (IET). Countries with surplus credits can sell them to countries with reduction commitments in the international carbon credit market.<sup>11</sup>

In Europe, in order to help EU member nations meet their commitments under the Kyoto Protocol, the Commission issued Directive 2003/87/EC (Directive), launching the Greenhouse Gas Emissions Trading Scheme (EC 2007) as a “market-based solution to provide incentives for curbing [GHG] emissions.”<sup>12</sup> The goal of this program was “to promote reductions of [GHG] emissions in a cost-effective and economically efficient manner.”<sup>13</sup> The ETS established the largest carbon-trading system in the world, and under this program the EU's twenty-seven member nations were able to trade in carbon emissions by buying and selling allowances and credits.

### **4. Issues in Member State Level – National Allocation Plan (NAP)**

Under the ETS, the Directive required that each member nation develops a National Allocation Plan (NAP).<sup>14</sup> The NAP has two components:

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<sup>10</sup> The Norwegian government made such opinion in the 2007 Oslo workshop co-organised by the Norwegian government and EEA. EEA stands for European Environment Agency, which is an agency of the European Union.

<sup>11</sup> Credits can be bought and sold in international carbon credits trading markets at the prevailing market price, such as the Chicago Climate Exchange and the European Climate Exchange (CCE 2010).

<sup>12</sup> Ved P. Nanda, Comment, The European Union's Multinational Carbon Trading Program, 85 Denv. U. L. Rev. 995, 995 (2008).

<sup>13</sup> Council Directive 03/87, 2003 O.J. (L275) 32 (EC) [hereinafter Directive 03/87]. Directive 03/87, art. 1.

<sup>14</sup> Directive 03/87, art. 9.

- (1) *The total quantity of CO<sub>2</sub> emission allowances that a member nation intends to allocate, and*
- (2) *A plan on how the member nation will distribute those allowances.*<sup>15</sup>

Although member nations have the liberty to design their own NAP, the Commission must approve each NAP before it is implemented.<sup>16</sup> After reviewing a member nation's proposed NAP, the Commission may offer criticism and recommendations, and a member nation may not implement its NAP unless "proposed amendments are accepted by the Commission."<sup>17</sup>

Additionally, the Commission retains the right to conditionally approve a member nation's NAP, offering specific recommendations to be undertaken prior to implementation.<sup>18</sup>

Responding to these controls, several member nations initiated litigation. Overall only a few cases have been decided on the matter because of the immense backlog in the European Court system.

For example, the Republic of Estonia submitted its NAP for the period 2008 to 2012 to the Commission. After the Commission objected to several elements of Estonia's proposed NAP, Estonia subsequently submitted a new version of its NAP. The Commission issued its contested decision regarding Estonia's NAP because Estonia proposed to distribute too many emission allowances and to allocate allowances to certain industries beyond their expected needs.

Accordingly, the contested decision called for Estonia to reduce the quantity of emission allowances by 47.8%.<sup>19</sup> Moreover, the contested decision stated that if Estonia adopted several specific amendments (for instance, to reduce Estonia's total quantity of allowances by approximately 11.6 million tons of CO<sub>2</sub>) to its NAP, the Commission would withdraw its objections and permit Estonia to proceed with implementing its NAP.<sup>20</sup>

In response, Estonia petitioned the European Court to annul the contested decision by alleging that the Commission had exceeded its authority by imposing a cap on Estonia's emissions. The European Court held that the Commission exceeded the limits of its power by imposing a specific ceiling on the total quantity of allowances permitted under Estonia's NAP.<sup>21</sup>

In making its decision, the European Court considered the factors that Estonia, like many recently-joining member nations from Eastern Europe, are more reliant on fossil fuels to run their economies, and are relatively poor compared with their Western European counterparts. Such economic condition supported Estonia's argument that the Commission infringed their sovereign rights to manage their own economy in violation of the EC Treaty.<sup>22</sup>

In the short term, the Court's decision in *Estonia* may lead to an oversupply of emission allowances in the market, thus a depression in the market price. In the long term, the result of this decision may hamper the Commission's ability to reduce its GHGs emissions in accordance with its commitments under the Kyoto Protocol.

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<sup>15</sup> Id.; see Cinnamon Carlarne, *Climate Change Policies an Ocean Apart: EU & US Climate Change Policies Compared*, 14 Penn St. Envtl. L. Rev. 435, 464 (2006).

<sup>16</sup> Id.

<sup>17</sup> Id.

<sup>18</sup> Id.; see Press Release, European Union, *Questions and Answers on Emissions Trading and National Allocation Plans for 2008 to 2012* (Nov. 29, 2006), available at [http://ec.europa.eu/environment/climat/pdf/m06\\_452\\_en.pdf](http://ec.europa.eu/environment/climat/pdf/m06_452_en.pdf).

<sup>19</sup> Case T-263/07, *Estonia v. Comm'n* (Ct. First Instance, Sept. 23, 2009), [http://curia.europa.eu/jcms/jcms/j\\_6](http://curia.europa.eu/jcms/jcms/j_6).

<sup>20</sup> Id.

<sup>21</sup> Case T-263/07, *Estonia v. Comm'n*, 2009 ECJ EUR-Lex LEXIS 803.

<sup>22</sup> See, e.g., Case T-369/07, *Latvia v. Comm'n*, 2007 O.J. (C 269) 67.

## 5. Issues in Business Level

In order to meet the quota targets set by the Kyoto Protocol with regards to the amount of greenhouse gases countries can produce; countries in turn, set quotas on the emissions of business entities. There are three principle ways to set such regulations:

*1. Taxation. The advantage of a straight tax on CO<sub>2</sub> emissions is that it is immediately enforceable and transparent. The disadvantage is that some businesses may have the market ability to pass the tax to consumers, and not cut emissions (Ratnatunga, 2008).*

*2. Carbon emission rationing system. This system allocates carbon credits or 'permits' to business entities for the emission of a certain quantity of greenhouse gases in a particular period. These permits may be given away free or sold at a predetermined price.*

*3. Cap-and-trade scheme. Companies are told how much CO<sub>2</sub> they can emit (the cap) for a period. If the companies produce less than the cap, they have surplus credits for sale. If they emit more than their cap, then they can buy credits from other businesses that come in under their cap (the trade).*

Theoretically, a carbon credit needs not have a monetary value, and it can be 'bartered' across nations. The problem is that different state authorities within a country may issue these carbon credits based on a monetary price. For Example, in Australia, the state authority Forests NSW issues carbon credits in New South Wales, such credits may not be fungible<sup>23</sup> with the credits being traded in Europe.

Jane Ratnatunga, Chair in Business Accounting at Monash University, opined that these 'carbon credits' are similar to 'taxi licenses' issued by a local authority that can be traded for money. However, even though the underlying basis of calculating a carbon credit is international, just like taxi licenses, the pricing of carbon credits varies from country to country and state to state (Ratnatunga, 2008).

In other words, significant arbitrage opportunities exist, and 'CO<sub>2</sub> emitters' in high cost countries can buy credits from trading exchanges in low-cost countries.

In theory, businesses that are over their quotas could buy carbon credits for their excess emissions, while businesses that are below their quotas can sell their remaining credits. By allowing credits to be bought and sold, a business for which reducing its emissions would be expensive can pay another business to make the reduction for it. If all entities reach their quota, then the country itself can reach its Kyoto Protocol quota.

Carbon credits thus create a market for reducing greenhouse emissions by giving a monetary value to the cost of polluting the air. This means that carbon becomes a cost of business and is seen like other inputs such as raw materials.

High CO<sub>2</sub> emitting entities, such as ocean carriers and manufacturing factories, will have an extra cost of running their businesses. On the other hand, the carbon trading will create new business opportunities for others, such as foresters and timber companies, who do not consider CO<sub>2</sub> as a separate line of business.

If carbon emission trading becomes a widespread phenomenon, there will be significant changes in many business practices. In the country level, agricultural countries as trees may no longer be seen as hinder to farming. Planting trees for conservation purposes will provide more long-term benefit to the global carbon cycle than will plantings for commercial harvesting, such as trees for logging and pulping. But even trees for conservation purposes may be lost, for example, most of the stored CO<sub>2</sub> in trees would return to the atmosphere in a forest fire. Furthermore, a new forest will realize its benefit until it reaches maturity, at which time new growth is compensated by death and decay.

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<sup>23</sup> Where one unit of commodity or currency may be substituted for the other with no loss of value.

## 6. Carbon Financial Statement Accounting

From the foregoing discussion, it can be seen that interesting Financial Accounting issues arise depending on if a credit is acquired:

1. *free from government*
2. *in a government auction with a cost*
3. *in a free-market with cost*

The issue is whether if the Kyoto requirements give rise to an asset or a liability. If the government rations CO<sub>2</sub> emissions via a 'cap and trade' allowance scheme, then that allowance will have a monetary value. An accountant will have to determine the follow issues:

1. *Is the 'allowance' an asset?*
2. *What are the different treatments of carbon allowances?*
3. *What model shall it be used if the allocated allowances remain off-balance sheet?*
4. *What model shall it be used if the allocated allowances are recognized in the balance sheet?*
5. *Is offsetting of assets and liabilities be permitted?*

### 1. *Is the 'allowance' an asset?*

The GHG Protocol Corporate Accounting and Reporting Standard (World Business Council for Sustainable Development 2004), which aims to provide a step-by-step guide for companies to quantify and report their GHG emissions; however, the entire standard does not suggest any accounting treatment for carbon allowance. Carbon allowance can be treated as an intangible asset (*Ratnatunga, 2008*), and if it is treated as an intangible asset, then it would be reasonable to measure it at cost when the business acquired the carbon allowance through a third party transaction, since such a transaction will meet the reliability test.

### 2. *What are the different treatments of carbon allowances?*

The current thinking of the financial accounting profession gives three treatments of carbon allowance (*Ratnatunga, 2008*):

#### Treatment 1:

If the carbon allowances are allocated by governments for less than fair value, the accountant should debit intangible asset, and credit revenue). The carbon allowance is in the nature of government grant, and it shall be measured at cost when received from the government. The grant of allowances is recognized in income on a systematic basis over the compliance period.

#### Treatment 2:

If a trading scheme exists, the accountant should debit intangible asset, and credit equity reserves at fair value. The fair value will be the market value.

#### Treatment 3:

If the business wants to treat the carbon allowance as an obligation, then the account will treat it as a liability (debit: expense; credit: liability) at fair value; and the subsequent purchase in an open market 'carbon credits' equal to the shortfall (debit: liability; credit: cash) at market value.

### 3. *What model shall it be used if the allocated allowances remain off-balance sheet?*

A net model has been proposed if an entity keeps allocated allowances off-balance sheet, and the business only accounts for actual emissions by the amount of insufficient allowances through carbon credits purchase from the market, the accountant should debit expenses, and credit cash at market price.

4. *What model shall it be used if the allocated allowances are recognized in the balance sheet?*

An amortising model has been proposed if an entity recognizes allocated allowances as an asset (debit: asset, credit equity reserves) at cost price. Subsequently, the entity amortizes the allowances as it pollutes (debit expense, credit asset).

5. *Is offsetting of assets and liabilities be permitted?*

Most approaches treat carbon allowances (assets) independently to the obligations (liabilities), and accordingly, offsetting of the assets and liabilities is not likely to be permitted. Thus carbon allowances/liabilities could represent a significant figure and thus have an impact on the "bottom line" volatility of a company's reported financial statements (Ratnatunga, 2008).

## 7. United States

US did not rectify the Kyoto Protocol, but there are active markets provided for trading of emission rights in the US.

In 2003, the Emerging Issues Task Force (EITF) added in its agenda on providing a comprehensive accounting model for cap-and-trade emissions reduction program, which plan to address asset recognition, measurement and impairment, cost allocation, liability recognition, presentation (gross versus net), and disclosures.

On analyzing whether a cap-and-trade emissions reduction program be recognized an asset for emissions credits, the Task Force noted that most US companies had been accounting for emissions allowances similar to the requirements established in 1993 under the Federal Energy Regulatory Commission's ("FERC") Uniform System of Accounts.

FERC requires emission allowances to be recorded on a historical cost basis (e.g., allocated allowances would be recorded at zero cost basis) as inventory with recognition of cost in earnings as pollution occurs based on a weighted-average cost.

If emissions rights were considered assets, the issue considered four views as to the nature of the asset, which would determine the appropriate accounting guidance.

*View #1: Emissions rights are intangible assets as defined under Statement of Financial Accounting Standard ("SFAS") No. 142.<sup>24</sup> Reason: Since emissions rights lack physical substance, they cannot meet the definition of a financial asset under SFAS 140.<sup>25</sup>*

*View #2: Emission rights are financial assets because the trading of emissions rights in the market provided evidence that they qualified as financial assets, and such emissions rights would be readily convertible to cash.*

*View #3: Emissions rights are inventory, as they are part of the necessary costs to comply with environmental regulations.*

*View #4: The asset nature of the emissions rights depend on the intended use by the entity. If the entity uses the emissions rights for operational purposes, then it should be recorded as intangible assets or inventories.. On the other hand, if the entity uses the emissions rights for trading purposes, then it should be recorded as financial assets.*

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<sup>24</sup> SFAS 142 Goodwill and Other Intangible Assets.

<sup>25</sup> SFAS 140 Transfers and Servicing of Financial Assets and Extinguishments of Liabilities.

Although the Task Force dropped the emission credit project from its agenda with no plans for further discussion in November 2003, the American Institute of Certified Public Accountants seems to fill the gap by issuing the Statement about attest engagements on greenhouse gas emissions Information two years later (AICPA, 2005). The statement provides AICPA's views on issues such as (a) reporting an assertion relates to GHG emissions inventory, and (b) recording the emission reduction with a registry.

## **8. Conclusion**

Accounting for emissions trading remains a challenge, and market participants continue to wait for clear guidance from accounting standards setters. Formative efforts have been unsuccessful.

In an attempt to guide participants how to account for cap and trade emission trading schemes, the International Financial Reporting Interpretations Committee published the "*IFRIC 3: Emission Rights*". IFRIC 3 stated that allowances are intangible assets and should be measured at fair value when received from the government. The grant of allowances is recognized in income on a systematic basis over the compliance period.

Unfortunately, considerable pressure from both the business community and European politicians, led to the withdrawal of "*IFRIC 3: Emission Rights*" by the International Accounting Standards Board (IASB) within a year of its issuance.

In the US, the Emerging Issues Task Force ("EITF") also attempted to address the accounting issues relate to emissions trading, however, it was never finalized, and ultimately removed from the EITF's agenda.

As a consequence, many companies remain confused about the appropriate accounting treatments under both International Financial Reporting Standards ("IFRS") and generally accepted accounting principles in the United States ("US GAAP").

The consequence of more than one acceptable accounting treatment for emission rights is that: the effect on the different components of financial reports (i.e. balance sheet, profit or loss or cash flow statements) will be different depending on which treatment is adopted (Concessi, 2007). This could have significant implications on how a company manages its participation in the emissions trading scheme. The investors in the market may expect accounting results for emissions rights be comparable across the sector. However, in practice a company's choice of accounting policy may affect the entity's method in revaluing emission rights quite differently, particularly where it is not only an emitter but also a trader.

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