

A Case Study of the Accounting Models for the Participants in an Emissions Trading Scheme

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Abstract: As emissions trading schemes are becoming more popular across the world, accounting has to keep up with these new economic developments. The absence of guidance regarding the accounting for greenhouse gases (GHGs) emissions generated by the withdrawal of IFRIC 3-Emission Rights - is the main reason why there is a diversity of accounting practices. This diversity of accounting methods makes the financial statements of companies that are taking part in emissions trading schemes like EU ETS, difficult to compare. The present paper uses a case study that assumes the existence of three entities that have chosen three different accounting methods: the IFRIC 3 cost model, the IFRIC 3 revaluation model and the “off balance sheet” approach. This illustrates how the choice of an accounting method regarding GHGs emissions influences their interim and annual reports through the changes in the companies’ balance sheet and financial results.

Keywords: accounting for GHGs; sustainability accounting; carbon accounting; IFRIC 3; Emissions Trading

JEL Classification: M41; M48

1. Introduction

As a result of the Kyoto Protocol, a wide range of emissions trading schemes have emerged all around the world. Two types of schemes have been implemented: cap & trade schemes and baseline & credit schemes.

In a cap and trade scheme there is an overall limit to the emissions of all participants. An authority, (typically the government in a mandatory cap & trade scheme) sets a cap on the emissions (the maximum allowable emissions for all the participants in the scheme). It then allocates greenhouse gas emission allowances to

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the installations that are in the scope of the scheme that are equivalent to the previously set emissions cap. Emissions of greenhouse gases are monitored and at the end of the compliance period, the participants must surrender a number of allowances that are equivalent to their actual emissions.

The participants in a cap and trade scheme are allowed to trade the allowances. If an installation has emitted less than its allocated allowances, it can sell the spare allowances to another organization that has fewer allowances than its GHGs emissions. This will constitute an incentive for the operators of the installations where it is cheap to decrease emissions to sell the allowances to the entities where the reduction of GHGs emissions is more expensive than to buy the allowances. This mechanism enables operators to meet the overall greenhouse gases cap at the lowest possible cost.

The compliance periods are usually set to span over a few years. For administrative purposes, compliance periods are split into yearly monitoring periods. The phases of an emissions trading year in the main cap & trade scheme (EU ETS) are illustrated in Figure 1.



Figure 1. The Emissions Trading Year in a Cap & Trade Scheme (EU ETS)

Source: SEPA (2012)

In a baseline and credit scheme, there is also a cap on the overall emissions of the participants. The authority that supervises the scheme (typically the government in a mandatory baseline and credit scheme), then allocates baselines to the participants, representing the allowable emissions limit for a specific participant. Unlike the allowances that are issued in a cap and trade scheme, baselines are not tradable. At the end of the compliance period, after the actual emissions are verified, the government allocates credits to the participants that have maintained

their actual emissions below the allocated baseline. Credits can be traded or can be used to offset excess emissions in future compliance periods.

The participants that have emitted GHGs above their allocated baselines are required to surrender credits to cover the excess emissions, a few months after the compliance period has ended. The credits can be traded between their allocation date and the deadline for surrendering the credits for excess emitters. This makes the trading period in a baseline and credit scheme very narrow compared to a cap & trade scheme (a few month vs. the whole year).

Table 1. Emissions Trading Schemes Classification

		Scheme type	
		Cap & trade	Baseline and credit
Scheme participation	Mandatory	Mandatory cap & trade schemes	Mandatory baseline and credit schemes
	Voluntary	Voluntary cap & trade schemes	Voluntary baseline and credit schemes

Source: Based on IFAC (2012)

Mandatory cap & trade schemes are schemes with compulsory participation. The main example of this type of scheme is the European Union Emissions Trading Scheme - EU ETS (EU, 2003, 2004).

The main example of a voluntary cap & trade scheme is the Chicago Climate Exchange (CCX) that was established in 2003 with the aim of reducing the GHGs emissions in US. CCX operated two four-year commitment periods (the first one between 2003-2006 followed by a second one between 2007 and 2010). The Chicago Climate Exchange closed its operations by the end of 2010 due to the lack of legislative interest (Smith, 2010).

The first mandatory baseline and credit scheme was the New South Wales Greenhouse Gas Reduction Scheme (GGAS) (IFAC, 2012). GGAS has been launched on 1 January 2003 (GGAS, 2011). The scheme ended in 2012 and has been replaced by a carbon tax (MRE, 2012).

The main example of a voluntary baseline and credit scheme is the Clean Development Mechanism introduced by the Kyoto Protocol.

2. Accounting Background

As the upcoming start of the first phase in the EU ETS scheme was closing in, and it coincided with the first year of implementation of the IASs for listed companies throughout EU, IFRIC was given the task to develop mandatory guidance for financial reporting of emissions rights.

On 15 May 2003, IFRIC has released the first draft (D1) of IFRIC 3 - Emission Rights (IASB, 2003). IFRIC 3 D1 was available on IASB's website during the comment period. 40 comment letters were received until the comment deadline which ended on 14 July 2003 (IAS Plus, 2012; Zhang-Debreceeny, 2010).

The final version of IFRIC 3 „Emission Rights” was released on 2 December 2004 (IASB, 2004), with the intention to be effective for annual periods beginning after 1 March 2005, the first year of the EU Emission Trading Scheme implementation.

IFRIC 3 considered that, on initial recognition, the emission allowances should be recognized as an intangible asset measured at their fair value. The entity should follow the recommendations of IAS 38 “Intangible Assets” (IASB, 2012a). If acquired for a value that is less than their fair value, a government grant should be recognized in accordance with IAS 20 “Accounting for Government Grants and Disclosure of Government Assistance” (IASB, 2012b). The government grant should be treated as deferred income and should be recognized systematically as income over the period for which the emissions allowances were issued. The subsequent evaluation of the emissions allowances can be done under either the cost or the revaluation model described in IAS 38. The entity should recognize a liability, as it emits greenhouse gases, for its obligation to deliver a number of allowances equal to the actual emissions. IFRIC has interpreted this liability to be a provision as described by IAS 37 “Provisions, Contingent Liabilities and Contingent Assets” (IASB, 2012c) as the recognition of the liability requires the estimation of the costs (e.g. the present market value of the allowances required to cover the actual emissions at the balance sheet date).

Right from the start, the interpretation has been controversial. In a letter to the general director of the European Commission Directorate General for the Internal Market, EFRAG (The Technical Expert Group of the European Financial Reporting Advisory Group), recommended the EU commission not to adopt IFRIC 3 (EFRAG, 2005; Deloitte, 2005).

In the case of an entity that applies the cost model described in IFRIC 3, EFRAG was concerned that it would generate a measurement mismatch between the assets and liabilities (the emissions allowances at hand are measured at cost and their corresponding liability is measured at fair value). This will lead to artificial values in the balance sheet of an entity which does not trade these certificates, but is affected by changes in the market price of the allowances.

For an entity that follows the revaluation model described in IFRIC 3, EFRAG estimated that it would create a mismatch in the place where the gains and losses are presented. This model would not generate a measurement mismatch like the one described in the previous paragraph but it introduces a new discrepancy if the value of the emissions allowances changes, as revaluation gains are recognized

directly in equity (other comprehensive income) while expenses relating to the revaluation of the liability are recognized in the profit and loss account.

Applying IFRIC 3 would also generate a timing mismatch between the moment the asset is recognized (when the allowances are obtained – allocated by the government or purchased), and the moment when the liability would be recognized (as the entity emits GHGs).

EFrag has also showed concerns regarding the measurement of the asset (the allowances) and liabilities (the provision) that must be continued until the settlement of the liability even though the compliance period is over.

IFRIC has withdrawn IFRIC 3 shortly after it was issued (IASB, 2005). In December 2007, IASB has started a new and more comprehensive project called Emissions Trading Schemes Project in order to provide guidance on accounting for carbon allowances (IFRIC 3 has covered just the accounting of emission rights in a cap & trade scheme while the Emissions Trading Schemes Project is taking into consideration both cap & trade and baseline & credit schemes with voluntary and mandatory participation) (IASB, 2011; FASB, 2010).

Work on the Emissions Trading Schemes Project has been paused in November 2010 when, in a joint meeting between the IASB and the FASB the timetable of several projects including the Emissions Trading Schemes has been amended (IASB, 2011).

As there is no mandatory guidance for the accounting of the emissions right for an entity participating in an emissions trading scheme, since the withdrawal of IFRIC 3, entities use a variety of accounting approaches (IETA, 2007).

One of the alternatives to IFRIC 3 is the “net liability” or “off balance sheet” approach. An entity that makes use of this accounting method should recognize no asset and no deferred income as the emissions allowances are received. The allowances are recorded off balance sheet at their nominal value (zero if they are received for free). As the allowances are used to counterbalance the liability, no balance sheet accounting entries are made if the allowances are enough to cover the entities obligations arising from its CO₂ emissions. If the entity has a deficit of allowances, the entity should recognize a provision measured at the present market value of the allowances required to cover its emissions obligation.

3. The Case Study

The following case study will compare the influence of the accounting approach for a company in the scope of an emission trade scheme like EU ETS. The study assumes the existence of three entities (Company A, B and C) that have chosen the three different accounting methods presented in the previous paragraph (Company

A uses IFRIC 3 cost model, Company B uses IFRIC 3 revaluation model and Company C the “off balance sheet” approach)

In order to preserve the comparability, the case study follows the same example used by Cook (Cook, 2009), but adds the “off balance sheet” approach. The example also uses the assumptions on which Cook has based his case study:

- The entities’ financial year coincides with the annual cycle for the allocation of allowances and accountability of the emissions, (from January to December);
- The entities’ receive a grant of allowances covering 12,000 metric tonne (m.t.) of emissions.
- The fair value of allowances fluctuates as presented in Table 2.
- The entity’s expected annual emissions and its actual emissions are presented in Table 3.
- On 31 December the entity buys 500 additional allowances at 11 currency units (c.u.) per allowance to cover its liability for the 500 m.t. of excess emissions.

The influence of the accounting model on the companies’ balance sheet is presented in Table 4. Table 5 shows the influence of the accounting model on the companies’ income statement.

Table 2. The Fluctuation of Allowances Fair Value [c.u. / m.t.]

<i>Date:</i>	<i>01 January</i>	<i>30 June</i>	<i>31 December</i>	<i>30 April next year</i>
Allowances fair value	10	12	11	11

Source: The Example Uses the Same Data as Cook (2009)

Table 3. The Entities Estimated and Actual Emissions [m.t.]

Date:	01 January	30 June	31 December
Entity’s annual emissions estimations	12,000	12,000	-
Entity’s actual emissions	-	5,500	7,000

Source: The Example Uses the Same Data as Cook (2009)

Table 4. The Influence of the Accounting Model on the Companies' Balance Sheet
[c.u.]

	Company A IFRIC 3 cost model			Company B IFRIC 3 revaluation model			Company C. "Off balance sheet" approach		
	30.06.N	31.12.N	30.06.N+1	30.06.N	31.12.N	30.06.N+1	30.06.N	31.12.N	30.06.N+1
ASSETS									
Allowances	120,000	125,500	0	144,000	137,500	0	0	5,500	0
Cash	0	(5,500)	(5,500)	0	(5,500)	(5,500)	0	(5,500)	(5,500)
Total	120,000	120,000	(5,500)	144,000	132,000	(5,500)	0	0	(5,500)
LIABILITIES									
Deferred Income (Govt. Grant)	65,000	0	0	65,000	0	0	0	0	0
Emission Liability	66,000	137,500	0	66,000	137,500	0	0	5,500	0
Total	131,000	137,500	0	131,000	137,500	0	0	5,500	0
EQUITY									
Other comprehensive income	0	0	0	24,000	12,000	12,000			
Current year result	(11,000)	(17,500)	12,000	(11,000)	(17,500)	0	0	(5,500)	0
Previous year result	0	0	(17,500)	0	0	(17,500)	0	0	(5,500)
Total	(11,000)	(17,500)	(5,500)	13,000	(5,500)	(17,500)	0	(5,500)	(5,500)
Liabilities & Equity Total	120,000	120,000	(5,500)	144,000	132,000	(5,500)	0	0	(5,500)

Table 5. The Influence of the Accounting Model on the Companies' Financial Results
[c.u.]

	Company A IFRIC 3 cost model			Company B IFRIC 3 revaluation model			Company C. "Off balance sheet" approach		
	30.06.N	31.12.N	30.06.N+1	30.06.N	31.12.N	30.06.N+1	30.06.N	31.12.N	30.06.N+1
INCOME									
Income from government grant	55,000	120,000	0	55,000	120,000	0	0	0	0
Gains on disposal of allowances	0	0	12,000	0	0	0	0	0	0
Total	55,000	120,000	12,000	55,000	120,000	0	0	0	0
EXPENSES									
Emissions cost	66,000	137,500	0	66,000	137,500	0	0	5,500	0
Total	66,000	137,500	0	66,000	137,500	0	0	5,500	0
CURRENT YEAR RESULT									
Profit (+)/ Loss (-)	(11,000)	(17,500)	12,000	(11,000)	(17,500)	0	0	(5,500)	0

4. Conclusions

The balance sheet of company A, that uses IFRIC 3 cost model, shows a measurement mismatch between the assets (the emission allowances) and liabilities (emission liability) because the emissions allowances are evaluated at cost while the emission liability is calculated at the fair value of the allowances required to settle it. This leads to artificial values in the balance sheet and income statement of Company A which only needed 500 extra emissions allowances valued at 5,500 c.u., yet its profit is affected by -16,500 c.u. mainly due to changes in the value of the allowances.

Company B has adopted the IFRIC 3 revaluation model. This has created a mismatch in the place where the gains and losses generated by the changes in the value of the emissions allowances are presented. Allowances revaluation gains are recognized in other comprehensive income (equity) while expenses relating to the changes in the value of the liability are recognized as income or expenses in the profit and loss account.

Company C results are closer to the effort made to cover the emission liability (the purchase of 500 extra emissions allowances at 5,500 c.u.). The main disadvantage of the “off balance sheet” method used by this company is that its balance sheet hides the company’s exposure to emission allowances market and its potential emissions liability.

The absence of guidance regarding the accounting for GHGs emissions is the main reason why there is a diversity of accounting practices, which makes the financial statements of large companies, taking part in emissions trading schemes like EU ETS, difficult to compare. There are also a lot of concerns about the true and fair image and also regarding the understandability, relevance, reliability and comparability of the financial information offered by this variety of accounting models.

In a study by Lowel et. al. (2010), he established that the vast majority of the enterprises in the EU ETS scheme uses a net model (off balance sheet method) and only account for their net position. As Table 4 and 5 shows, this method provides the least amount of information on a company exposure to carbon emissions regulations and carbon markets based on its financial statements.

A variant of the off balance sheet method is officially adopted in Romania. This provides a partial fix for the issues identified with the application of IFRIC 3’s recommendations, but it also suffers from the same deficiencies as the “off balance sheet” method.

5. References

- Cook, A. (2009). Emission Rights: From Costless Activity to Market Operations. *Accounting, Organizations and Society*, 34(3-4), pp. 456–468.
- EU (2003). Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. *Official Journal of the European Union*, October 25. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:HTML>, date: 12.10.2012.
- EU (2004). Directive 2004/101/EC of the European Parliament and of the Council, *Official Journal of the European Union*, November 13. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:338:0018:0018:EN:PDF>, date:12.10.2012.
- FASB (2010). *FASB Technical Plan and Project Updates, Emissions Trading Schemes*. Retrieved from http://www.fasb.org/jsp/FASB/FASBContent_C/ProjectUpdatePage&cid=900000011097, date: 16.11.2012.
- GGAS (2011). *Introduction to the Greenhouse Gas Reduction Scheme (GGAS)*. Retrieved from <http://www.greenhousegas.nsw.gov.au/documents/Intro-GGAS-June11.pdf>, date: 11.11.2012.
- IAS Plus (2012). *IFRIC 3—IAS Plus*. Retrieved from <http://www.iasplus.com/en/standards/interpretations/interp4>, date: 15.11.2012.
- IASB (2003). *IASB Press Release for the Release of Draft Interpretation D1 Emission Rights*. Retrieved from <http://www.iasplus.com/en/binary/pressrel/ifricd1.pdf>, date: 10.11.2012.
- IASB (2004). *IASB Press Release for the Release of IFRIC 3*. Retrieved from <http://www.iasplus.com/en/binary/pressrel/2004pr32.pdf>, date: 10.11.2012.
- IASB (2005). *Public Statement on Withdrawal of IFRIC 3*. Retrieved from <http://www.iasplus.com/en/binary/pressrel/0507withdrawifric3.pdf>, date: 10.11.2012.
- IASB (2011). *Emissions Trading Schemes*. Retrieved from <http://www.ifrs.org/Current-Projects/IASB-Projects/Emission-Trading-Schemes/Pages/Emissions-Trading-Schemes.aspx>, date: 16.11.2012.
- IASB (2012a). *IAS 38 Intangible Assets*. Retrieved from <http://eifrs.ifrs.org/eifrs/bnstandards/en/2012/ias38.pdf>, date: 09.10.2012.
- IASB (2012b). *IAS 20 Accounting for Government Grants and Disclosure of Government Assistance*. Retrieved from <http://eifrs.ifrs.org/eifrs/bnstandards/en/2012/ias20.pdf>, date: 09.10.2012.
- IASB (2012c). *IAS 37 Provisions, Contingent Liabilities and Contingent Assets*. Retrieved from <http://eifrs.ifrs.org/eifrs/bnstandards/en/2012/ias37.pdf>, date: 09.10.2012.
- IETA (2007). *Trouble-Entry Accounting – Revisited Uncertainty in accounting for the EU Emissions Trading Scheme and Certified Emission Reductions*. Retrieved from http://www.ieta.org/assets/Reports/trouble_entry_accounting.pdf, date: 14.11.2012.
- IFAC (2012, March). *IFAC IPSASB Meeting Agenda Paper 3.0*. Retrieved from <http://www.ifac.org/sites/default/files/meetings/files/20120206%20IPSASB%20Agenda%20Item%203.0%20ETS%20-%20V1.pdf>, date: 19.10.2012.

Lovell, H., Aguiar, T. S. de, Bebbington, J. & Larrinaga-Gonzalez, C. (2010). *Accounting for Carbon. The Association of Chartered Certified Accountants*. Retrieved from <http://www.accaglobal.com/content/dam/acca/global/PDF-technical/environmental-publications/rr-122-001.pdf>, date: 07.10.2012.

MRE (2012). *The Hon Chris Hartcher, Minister for Resources and Energy, Special Minister of State Minister for the Central Coast Media Release - Green Scheme To Close When Carbon Tax Starts*. Retrieved from <http://www.greenhousegas.nsw.gov.au/Documents/Media-Closure-Apr12.pdf>, date: 19.10.2012.

SEPA (2012). *How Does the System Work*. Retrieved from http://www.sepa.org.uk/climate_change/solutions/eu_emissions_trading_system/how_does_the_system_work.aspx, date: 06.02.2013.

Smith, A. (2010). *Chicago Climate Exchange to Shut Down Emissions Trading*, CNN. Retrieved from http://money.cnn.com/2010/11/17/news/economy/climate_exchange/index.htm, date: 14.11.2012.

Zhang-Debreceny, E. (2010). *Reconsidering Accounting for Emission Rights from an Environmental Ethics Perspective: a Critical Examination of IFRIC 3 Emission Rights* - doctoral thesis. Retrieved from <http://ro.uow.edu.au/theses/3219/>, date: 14.11.2012.