

**15th Meeting of the London Group on
Environmental Accounting
Wiesbaden, 30 November – 4 December 2009**

Quantity tables for emission permits

Thomas Olsen

Quantity Tables for Emission Permits

Thomas Olsen, Statistics Denmark

Prepared for the 15th meeting of the London Group on Environmental Accounting,
Wiesbaden, Germany 30 November - 4 December 2009

Quantity Tables for Emission Permits

Statistics Denmark
25 November 2009

Contact information:

Thomas Olsen

Senior Adviser
National Accounts - Environmental Accounts
Statistics Denmark
Sejrogade 11
DK-2100

Phone: +45 39 17 39 17
Direct: +45 39 17 38 28
E-mail: Tol@dst.dk

Table of contents

1	BACKGROUND.....	3
2	OVERALL IDEA	4
3	PROPOSED QUANTITY TABLES	4
	RELEVANT DOCUMENTS.....	9

1 Background

At the previous London Group meetings held in Brussels in September 2008 and in Canberra in April 2009, it was agreed that quantity tables on the physical stock and flow of emission permits¹ should be included in the revised handbook on National Accounting on Integrated Environmental and Economic Accounting (SEEA)

This provides the background for the tables proposed in this paper. The tables should be seen as a first draft.

Two main purposes The quantity tables for the emission permits presented in this paper serves two main purposes.

First of all, the tables account for all flows of permits within the national economy as well as between economies. That is from the creation of the permits by Government or the use of mechanisms, e.g. joint implementation (JI) or the clean development mechanism (CDM) to the trade with the permits and ultimately the surrendering of the permits.

The tables allow users to see, which industries holds the permits and they allow users to see how industries comply with emission targets laid down in emission trading schemes. Furthermore, it allows users to see how national economies comply with emission targets laid down in for instance the Kyoto protocol.

Secondly, the quantity tables, because of the close link with energy flow accounts and air emission accounts, allow users and modellers to analyse the energy input structure in the industries and hence, the industries' demand for permits. If the quantity tables are also made up in monetary values, this will allow users to analyse the effect of changes in the permit price on the industries' decisions on which type of fuel to use.

Outline Section 2 describes the general idea behind the proposed tables. Section 3 contains a brief description of the proposed tables as well as the draft proposed tables.

The London group is invited to give its view on;

- Are the levels of detail in the tables sufficient?
- Does the London Group agree that the proposed tables should be made up in both physical units (number of permits) as well as in monetary values even though this way of describing the monetary flows will be supplementary to the description of the flows in the SNA 2008?
- Does the London Group think that other tables on permits should be included in the revised SEEA as well? Which?

¹ In this paper, the terms emission permit, emission right and allowance are used synonymously.

2 Overall idea

The tables have been developed to be in line with energy accounts as well as air emissions accounts.

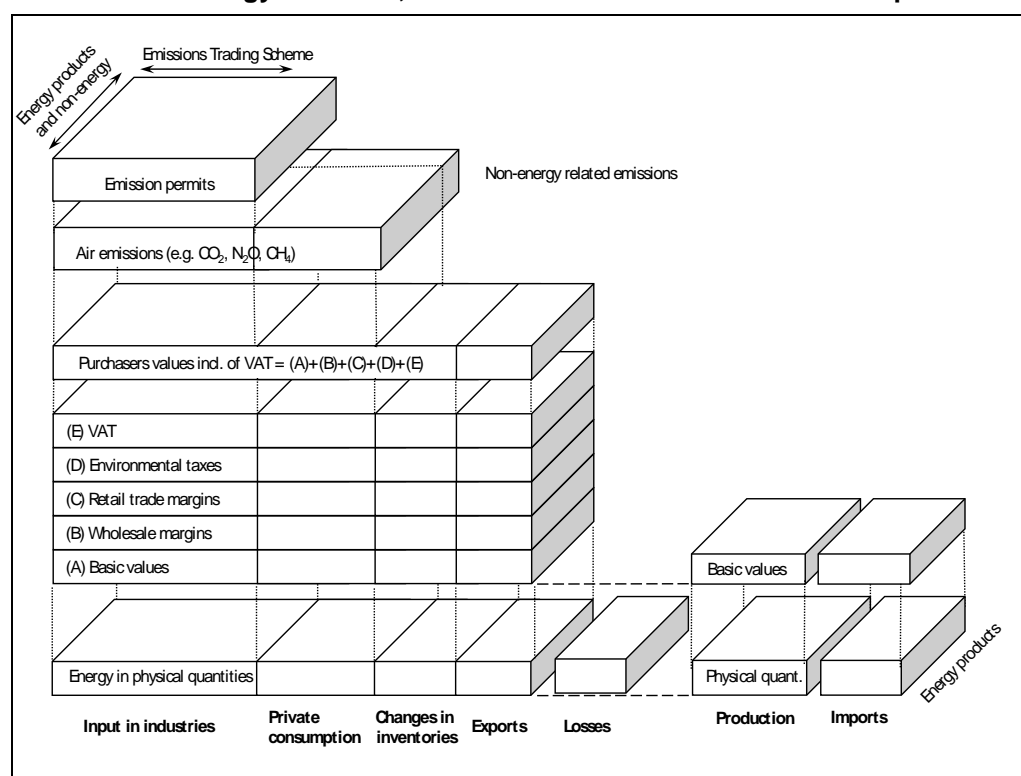
The quantity table on the physical emission permits comprise information on the stock of permits as well as the flows.

The structure of the tables is attempted to be as simple and as flexible as possible. The latter is due to the fact that whereas emission permits and basic cap and trade systems are a well established tool for monitoring emissions, the way emission trading schemes are designed, is very likely to develop over time. It is therefore very difficult to be too specific on the types of permits and credits that might become relevant in the future.

General idea The general idea is that the tables should provide users with information on not only the stocks and flows of the emission permits but also with information on the surrendering of the permits consistent with the use of energy and the air emissions. This is illustrated in the figures below.

The figure show how the information in the energy accounts link to the information in the air emission accounts and finally how it link to the flow of emission permits, i.e. the surrendering of the permits. Thus, the figure summarises the overall purpose of organising data in an integration framework like SEEA.

Link between energy accounts, air emissions accounts and emission permits



In the figure, the permits are thought of as have been (proportionately) broken down by emissions by types of energy. This of course, can only be done if information on the air emissions is also available by type of energy product.

This way of doing it has a clear analytical value, especially if the flow of the permits is made up in monetary values as well. In this case it becomes possible to add the costs related to the permits to the cost of the energy and thus, to have a better description of the costs the enterprises base their decisions on when deciding on their energy input. This is expected to be of great value to modellers.

3 Proposed quantity tables

The proposed draft tables consist of a supply table and a use table. The supply table shows the origin of the permits whereas the use table shows what happens with the permits within a given time period.

In addition to those tables, is a table containing information on both the stock and the flow of permits by industry.

Supply table The supply table shows the supply of permits broken down by industries and type of permit. That is, whether the permits has been given to the industries free of charge or the industries have bought them or finally, if the permit originates from mechanisms like the JI- or CDM mechanisms. Furthermore, the supply table includes imports. See table 1.

Use table The use table shows the actual uses of the permits. That is, if the industry has surrendered the permit or if it has sold the permits. Another use is if the industries or the households have decided to cancel the permits so that it is no longer available for other, who later on would want to surrender the permit. The use table also includes information on exports of permits as well as changes in inventories. See table 2.

Balance sheet The third table comprises information on the opening stock and the closing stock of permits as well as the flows of the different types of permits. The table contains the same flows as can be seen in table 1 and 2. The table however, contains valuable information on each industry's stock of permits.

It should be mentioned that the terminology used in the tables presented here, is different from the terminology, which is normally used in the national accounts. For example, to be fully consistent with the national accounts terminology, the trade with of the permits should be referred to as an acquisition less disposals.

Other tables? In addition to the tables presented here, it could be useful to have other tables as well.

Monetary values Firstly, the three proposed tables could also be made up in monetary values. It would require though that the balance sheet is developed to also containing information on revaluations.

Institutional sectors Secondly, in the proposed tables, the information on the permits is broken down by industries. For some uses, it could be interesting to have the information on the permits by institutional units as well.

Table 1. Supply of permits

	Industries by ISIC									Total output	Imports Total	Total supply
	A	B	C	D	E	H	K	O	(F-U)			
	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas steam and air conditioning supply	Water supply; sewerage, waste management and remediation activities	Transportation and storage	Financial and insurance activities	Public administration etc.	Other Industries			
Emission permits												
Total supply	375	79	0	211	0	0	25	3342	0	4032		4132
Of which free permits								2355		2355		2355
Of which non-free permits		79					25	987		1091		1091
Of which credits	375			211						586	100	686

Please notice that the figures in the tables have been invented and serve an illustrative purpose only.

Table 2. Use of permits

	Use										Final consumption			Total use (trade, surrender and losses)	
	Intermediate Consumption, Industries by ISIC										Private consumption	Changes in inventories	Exports Total		Total final consumption
	A	B	C	D	E	H	K	O	(F-U)	Total					
Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas steam and air conditioning supply	Water supply, sewerage, waste management and remediation activities	Transportation and storage	Financial and insurance activities	Public administration etc.	Other Industries	Total Industries						
	Million CO ₂ -permits (=million tonnes of CO ₂)														
Permits															
Total use	0	533	754	2110	0	415	35	144	9	4000	2	-52	182	132	4132
Of which surrendered	0	481	854	1877	0	400	0	144	0	3756					
Of which sold permits	0	52	0	133	0	15	35	0	0	235					
Of which losses	0	0	0	0	0	0	0	0	9	9	2				

Please notice that the figures in the tables have been invented and serve an illustrative purpose only.

Table 3. Balance sheet

--

	Industries by ISIC										Con- sumption	Total
	A	B	C	D	E	H	K	O	(F-U)	A-U	2: Total Consumption	
	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas steam and air conditioning supply	Water supply; sewerage, waste management and remediation activities	Transportation and storage	Financial and insurance activities	Public administration etc.	Other Industries	1: Total Industries		
Million CO ₂ permits (=million tonnes of CO ₂)												
1 Opening stock	15	135	278	411	0	244	50	225	0	1358	5	1363
2 Allocated free of charge	0	300	472	1183	0	400	0	987	0	3342	0	3342
3 Purchased	0	204	206	538	0	208	0	241	9	1406	0	1406
<i>Of which free permits</i>	<i>0</i>	<i>0</i>	<i>52</i>	<i>50</i>	<i>0</i>	<i>133</i>	<i>0</i>	<i>80</i>	<i>0</i>	<i>315</i>	<i>0</i>	<i>315</i>
<i>Of which non-free permits</i>	<i>0</i>	<i>204</i>	<i>154</i>	<i>488</i>	<i>0</i>	<i>75</i>	<i>0</i>	<i>161</i>	<i>9</i>	<i>1091</i>	<i>0</i>	<i>1091</i>
<i>Of which from ROW</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
4 Credits	375	0	121	100	0	90	0	375	0	1061	0	1061
<i>Of which purchased</i>	<i>0</i>	<i>0</i>	<i>21</i>	<i>100</i>	<i>0</i>	<i>90</i>	<i>0</i>	<i>375</i>	<i>0</i>	<i>586</i>	<i>0</i>	<i>586</i>
<i>Of which from domestic projects</i>	<i>375</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>375</i>	<i>0</i>	<i>375</i>
<i>Of which from ROW</i>	<i>0</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>100</i>
5 Sold - permits	0	131	0	133	0	40	35	1169	0	1508	0	1508
<i>Of which free permits</i>	<i>0</i>	<i>52</i>	<i>0</i>	<i>133</i>	<i>0</i>	<i>15</i>	<i>35</i>	<i>0</i>	<i>0</i>	<i>235</i>	<i>0</i>	<i>235</i>
<i>Of which non-free permits</i>	<i>0</i>	<i>79</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>25</i>	<i>0</i>	<i>987</i>	<i>0</i>	<i>1091</i>	<i>0</i>	<i>1091</i>
<i>Of which to ROW</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>182</i>	<i>0</i>	<i>182</i>	<i>0</i>	<i>182</i>
6 Sold - credits	375	0	0	211	0	0	0	0	0	586	0	586
<i>Of which to other residents</i>	<i>375</i>	<i>0</i>	<i>0</i>	<i>211</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>586</i>	<i>0</i>	<i>586</i>
<i>Of which to ROW</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
7 Losses (cancelled permits)	0	0	0	0	0	0	0	0	9	9	2	11
8 Surrendered	0	481	854	1877	0	400	0	144	0	3756	0	3756
9 Closing stock (9=1+2+3+4-5-6-7-8)	15	27	223	11	0	502	15	515	0	1308	3	1311

Relevant documents

Le Laidier, Sylvie. Olsen, Thomas: Treatment of Emission Permits – Implications for the SEEA. Discussion paper prepared for the 14th meeting in the London Group on Environmental Accounting. Canberra, 27 – 20 April 2009.

Olsen, Thomas: Emission Permits. Issue paper prepared for the 13th meeting in the London Group on Environmental Accounting. Brussels, 30 September-3 October 2008.

Olsen, Thomas: Integrated Environmental and Economic Accounts for Tradeable Carbon Dioxide Emission Permits. Paper prepared for the Conference on Climate Change and Official Statistics, Oslo, 14-16 April 2008.

Statistics Denmark: Integrated Environmental and Economic Accounts for Tradeable Carbon Dioxide Emission Permits – Denmark 2005 (2006).