

# ENVIRONMENTAL MANAGEMENT ACCOUNTING

**A member of the Paper F5 examining team provides students with an introduction to environmental management accounting**

The new Paper F5 syllabus, which is effective from June 2011 onwards, introduces the area of environmental management accounting for the first time. It has, so far, been examined only in Paper P5 but, with its growing importance, it seemed appropriate to introduce it at an earlier level. The two requirements of the Paper F5 syllabus are as follows:

- discuss the issues businesses face in the management of environmental costs
- describe the different methods a business may use to account for its environmental costs.

You should note that the Paper F5 syllabus examines 'environmental management accounting' rather than 'environmental accounting'. Environmental accounting is a broader term that encompasses the provision of environment-related information both externally and internally. It focuses on reports required for shareholders and other stakeholders, as well of the provision of management information. Environmental management accounting, on the other hand, is a subset of environmental accounting. It focuses on information required for decision making within the organisation, although much of the information it generates could also be used for external reporting.

The aim of this article is to give a general introduction on the area of environmental management accounting, followed by a discussion of the first of the two requirements listed above.

Many of you reading this article still won't be entirely clear on what environmental management accounting actually is. You will not be alone! There is no single textbook definition for it, although there are many long-winded, jargon ridden ones available. Before we get into the unavoidable jargon, the easiest way to approach it in the first place is to step back and ask ourselves what management accounting itself is. Management accounts give us an analysis of the performance of a business and are ideally prepared on a timely basis so that we get up-to-date management information. They break down each of our different business segments (in a larger business) in a high level of detail. This information is then used to assess how the business' historic performance has been and, moving forward, how it can be improved in the future.

Environmental management accounting is simply a specialised part of the management accounts that focuses on things such as the cost of energy and water and the disposal of waste and effluent. It is important to note at this point that the focus of environmental management accounting is not all on purely financial costs. It includes consideration of matters such as the costs vs benefits of buying from

suppliers who are more environmentally aware, or the effect on the public image of the company from failure to comply with environmental regulations.

Environmental management accounting uses some standard accountancy techniques to identify, analyse, manage and hopefully reduce environmental costs in a way that provides mutual benefit to the company and the environment, although sometimes it is only possible to provide benefit to one of these parties. For example, activity-based costing may be used to ascertain more accurately the costs of washing towels at a gym. The energy used to power the washing machine is an environmental cost; the cost driver is 'washing'.

Once the costs have been identified and information accumulated on how many customers are using the gym, it may actually be established that some customers are using more than one towel on a single visit to the gym. The gym could drive forward change by informing customers that they need to pay for a second towel if they need one. Given that this approach will be seen as 'environmentally-friendly', most customers would not argue with its introduction. Nor would most of them want to pay for the cost of a second towel. The costs to be saved by the company from this new policy would include both the energy savings from having to run fewer washing machines all the time and the staff costs of those people collecting the towels and operating the machines. Presumably, since the towels are being washed less frequently, they will need to be replaced by new ones less often as well.

In addition to these savings to the company, however, are the all-important savings to the environment since less power and cotton (or whatever materials the towels are made from) is now being used, and the scarce resources of our planet are therefore being conserved. Lastly, the gym is also seen as an environmentally friendly organisation and this, in turn, may attract more customers and increase revenues. Just a little bit of management accounting (and common sense!) can achieve all these things. While I always like to minimise the use of jargon, in order to be fully versed on what environmental management accounting is really seen by the profession as encompassing today, it is necessary to consider a couple of the most widely accepted definitions of it.

In 1998, the International Federation of Accountants (IFAC) originally defined environmental management accounting as:

*'The management of environmental and economic performance through the development and implementation of appropriate environment-related accounting systems and practices. While this may include reporting and auditing in some companies, environmental management accounting typically involves lifecycle costing, full cost accounting, benefits assessment, and strategic planning for environmental management.'*

Then, in 2001, The United Nations Division for Sustainable Development (UNSD) emphasised their belief that environmental management accounting systems generate information for internal decision making rather than external decision making. This is in line with my statement at the beginning of this article that EMA is a subset of environmental accounting as a whole.

The UNDS make what became a widely accepted distinction between two types of information: physical information and monetary information. Hence, they broadly defined EMA to be the identification, collection, analysis and use of two types of information for internal decision making:

- physical information on the use, flows and destinies of energy, water and materials (including wastes)
- monetary information on environment-related cost, earnings and savings.

This definition was then adopted by an international consensus group of over 30 nations and thus eventually adopted by IFAC in its 2005 international guidance document on 'environmental management accounting'.

To summarise then, for the purposes of clarifying the coverage of the Paper F5 syllabus, my belief is that EMA is internally not externally focused and the Paper F5 syllabus should, therefore, focus on information for internal decision making only. It should not be concerned with how environmental information is reported to stakeholders, although it could include consideration of how such information could be reported internally. For example, Hansen and Mendoza (1999) stated that environmental costs are incurred because of poor quality controls. Therefore, they advocate the use of a periodical environmental cost report that is produced in the format of a cost of quality report, with each category of cost being expressed as a percentage of sales revenues or operating costs so that comparisons can be made between different periods and/or organisations. The categories of costs would be as follows:

- Environmental prevention costs: the costs of activities undertaken to prevent the production of waste.
- Environmental prevention costs: the costs of activities undertaken to prevent the production of waste.
- Environmental detection costs: costs incurred to ensure that the organisation complies with regulations and voluntary standards.
- Environmental internal failure costs: costs incurred from performing activities that have produced contaminants and waste that have not been discharged into the environment.
- Environmental external failure costs: costs incurred on activities performed after discharging waste into the environment.

It is clear from the suggested format of this quality type report that Hansen and Mendoza's definition of 'environmental cost' is relatively narrow.

## **MANAGING ENVIRONMENTAL COSTS**

There are three main reasons why the management of environmental costs is becoming increasingly important in organisations. First, society as a whole has become more environmentally aware, with people becoming increasingly aware about

the 'carbon footprint' and recycling taking place now in many countries. A 'carbon footprint' (as defined by the Carbon Trust) measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product. Companies are finding that they can increase their appeal to customers by portraying themselves as environmentally responsible. Second, environmental costs are becoming huge for some companies, particularly those operating in highly industrialised sectors such as oil production. In some cases, these costs can amount to more than 20% of operating costs. Such significant costs need to be managed. Third, regulation is increasing worldwide at a rapid pace, with penalties for non-compliance also increasing accordingly. In the largest ever seizure related to an environmental conviction in the UK, a plant hire firm, John Craxford Plant Hire Ltd, had to not only pay £85,000 in costs and fines but also got £1.2m of its assets seized. This was because it had illegally buried waste and also breached its waste and pollution permits. And it's not just the companies that need to worry. Officers of the company and even junior employees could find themselves facing criminal prosecution for knowingly breaching environmental regulations.

But the management of environmental costs can be a difficult process. This is because first, just as EMA is difficult to define, so too are the actual costs involved. Second, having defined them, some of the costs are difficult to separate out and identify. Third, the costs can need to be controlled but this can only be done if they have been correctly identified in the first place. Each of these issues is dealt with in turn below.

## **DEFINING ENVIRONMENTAL COSTS**

Many organisations vary in their definition of environmental costs. It is neither possible nor desirable to consider all of the great range of definitions adopted. A useful cost categorisation, however, is that provided by the US Environmental Protection Agency in 1998. They stated that the definition of environmental costs depended on how an organisation intended on using the information. They made a distinction between four types of costs:

- conventional costs: raw material and energy costs having environmental relevance
- potentially hidden costs: costs captured by accounting systems but then losing their identity in 'general overheads'
- contingent costs: costs to be incurred at a future date, eg clean up costs
- image and relationship costs: costs that, by their nature, are intangible, for example, the costs of preparing environmental reports.

The UNDSO, on the other hand, described environmental costs as comprising of:

- costs incurred to protect the environment, eg measures taken to prevent pollution and
- costs of wasted material, capital and labour, ie inefficiencies in the production process.

Neither of these definitions contradict each other; they just look at the costs from slightly different angles. As a Paper F5 student, you should be aware that definitions of environmental costs vary greatly, with some being very narrow and some being far wider.

## **IDENTIFYING ENVIRONMENTAL COSTS**

Much of the information that is needed to prepare environmental management accounts could actually be found in a business' general ledger. A close review of it should reveal the costs of materials, utilities and waste disposal, at the least. The main problem is, however, that most of the costs will have to be found within the category of 'general overheads' if they are to be accurately identified. Identifying them could be a lengthy process, particularly in a large organisation. The fact that environmental costs are often 'hidden' in this way makes it difficult for management to identify opportunities to cut environmental costs and yet it is crucial that they do so in a world which is becoming increasingly regulated and where scarce resources are becoming scarcer.

It is equally important to allocate environmental costs to the processes or products which give rise to them. Only by doing this can an organisation make well-informed business decisions.

For example, a pharmaceutical company may be deciding whether to continue with the production of one of its drugs. In order to incorporate environmental aspects into its decision, it needs to know exactly how many products are input into the process compared to its outputs; how much waste is created during the process; how much labour and fuel is used in making the drug; how much packaging the drug uses and what percentage of that is recyclable etc etc. Only by identifying these costs and allocating them to the product can an informed decision be made about the environmental effects of continued production.

In 2003, the UNDSO identified four management accounting techniques for the identification and allocation of environmental costs: input/outflow analysis, flow cost accounting, activity based costing and lifecycle costing. These are referred to later under 'different methods of accounting for environmental costs'.

## **CONTROLLING ENVIRONMENTAL COSTS**

It is only after environmental costs have been defined, identified and allocated that a business can begin the task of trying to control them.

As we have already discussed, environmental costs will vary greatly from business to business and, to be honest, a lot of the environmental costs that a large, highly industrialised business will incur will be difficult for the average person to understand, since that person won't have a detailed knowledge of the industry concerned.

I will therefore use some basic examples of easy-to-understand environmental costs when considering how an organisation may go about controlling such costs. Let us consider an organisation whose main environmental costs are as follows:

- waste and effluent disposal
- water consumption
- energy
- transport and travel
- consumables and raw materials.

Each of these costs is considered in turn below.

#### **Waste**

There are lots of environmental costs associated with waste. For example, the costs of unused raw materials and disposal; taxes for landfill; fines for compliance failures such as pollution. It is possible to identify how much material is wasted in production by using the 'mass balance' approach, whereby the weight of materials bought is compared to the product yield. From this process, potential cost savings may be identified. In addition to these monetary costs to the organisation, waste has environmental costs in terms of lost land resources (because waste has been buried) and the generation of greenhouse gases in the form of methane.

#### **Water**

You have probably never thought about it but businesses actually pay for water twice – first, to buy it and second, to dispose of it. If savings are to be made in terms of reduced water bills, it is important for organisations to identify where water is used and how consumption can be decreased.

#### **Energy**

Often, energy costs can be reduced significantly at very little cost. Environmental management accounts may help to identify inefficiencies and wasteful practices and, therefore, opportunities for cost savings.

#### **Transport and travel**

Again, environmental management accounting can often help to identify savings in terms of business travel and transport of goods and materials. At a simple level, a business can invest in more fuel-efficient vehicles, for example.

#### **Consumables and raw materials**

These costs are usually easy to identify and discussions with senior managers may help to identify where savings can be made. For example, toner cartridges for printers could be refilled rather than replaced.

This should produce a saving both in terms of the financial cost for the organisation and a waste saving for the environment (toner cartridges are difficult to dispose of and less waste is created this way).

## **ACCOUNTING FOR ENVIRONMENTAL COSTS**

In the context of Paper F5, when the syllabus requires you to describe the different methods of accounting for environmental costs, it aims to cover two areas:

- Internal reporting of environmental costs, which has already been discussed in the introduction.
- Management accounting techniques for the identification and allocation of environmental costs: the most appropriate ones for the Paper F5 syllabus are those identified by the UNDSO, namely input/outflow analysis, flow cost accounting, activity-based costing and lifecycle costing.

### **INPUT/OUTFLOW ANALYSIS**

This technique records material inflows and balances this with outflows on the basis that, what comes in, must go out. So, if 100kg of materials have been bought and only 80kg of materials have been produced, for example, then the 20kg difference must be accounted for in some way. It may be, for example, that 10% of it has been sold as scrap and 90% of it is waste. By accounting for outputs in this way, both in terms of physical quantities and, at the end of the process, in monetary terms too, businesses are forced to focus on environmental costs.

### **FLOW COST ACCOUNTING**

This technique uses not only material flows but also the organisational structure. It makes material flows transparent by looking at the physical quantities involved, their costs and their value. It divides the material flows into three categories: material, system and delivery and disposal. The values and costs of each of these three flows are then calculated. The aim of flow cost accounting is to reduce the quantity of materials which, as well as having a positive effect on the environment, should have a positive effect on a business' total costs in the long run.

### **ACTIVITY-BASED COSTING**

ABC allocates internal costs to cost centres and cost drivers on the basis of the activities that give rise to the costs. In an environmental accounting context, it distinguishes between environment-related costs, which can be attributed to joint cost centres, and environment-driven costs, which tend to be hidden on general overheads.

### **LIFECYCLE COSTING**

Within the context of environmental accounting, lifecycle costing is a technique which requires the full environmental consequences, and, therefore, costs, arising from production of a product to be taken account across its whole lifecycle, literally 'from cradle to grave'.

### **SUMMARY**

I hope you now have a clearer idea about exactly what environmental management accounting is and why it's important. While I have tried to give some simple, practical examples and explanations, a certain amount of jargon is unavoidable in this subject area. Enjoy your further reading.

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