ENVIRONMENTAL MANAGEMENT ACCOUNTING

Towards a Sustainable Future

by Dr. Maliah Sulaiman & Dr. Nik Nazli Nik Ahmad

The public has increasingly become more concerned about environmental issues. In Malaysia, for example, toxic waste dumping, illegal logging, open burning and indiscriminate land clearing confront us with ever regular frequency. These have led to serious questions on the role of business enterprises in society. Businesses need to realise that protecting the environment and simultaneously improving the bottom-line is not impossible.

Companies, particularly those in the developed world, are now recognising that it is good business sense to be environmentally responsible. Further, there is increasing evidence that a company's environmental performance has a positive influence on its economic performance. In other words, it pays to be 'green' — that waste minimisation and energy efficiency schemes can and will result in substantial economic benefits to the company. Accordingly, environmental matters are now regarded as strategic issues that go beyond mere compliance of environmental regulations. Thus, integrating environmental accounting into mainstream corporate accounting is essential.

There are two aspects of accounting that one can think of when discussing environmental accounting. The first is on external reporting and the second relates to internal decision-making. The latter is commonly referred to as environmental management accounting (EMA) or sometimes as just environmental accounting. To date, there has been a lot of focus on environmental reporting, especially after the launching of the *ACCA Environmental Reporting Guidelines in Malaysia* in 2003 and the *ACCA Environmental Reporting Award*. Very little has been discussed about EMA. However, EMA is now gaining prominence particularly after the International Federation of Accountants (IFAC) issued an *International Guidance Document on EMA* in August 2005. Consequently, it is timely that we focus on this aspect of accounting and in the process provide a greater exposure to the guideline.

ENVIRONMENTAL MANAGEMENT ACCOUNTING

There is no universally accepted definition of EMA. However, IFAC's guideline broadly defines EMA as the identification, collection, analysis and use of two types of information for internal decision-making:

1. physical information on the use, flows, and fates of energy, water, and materials (including waste) and
2. monetary information on environment-related costs, earnings and savings.

Thus, the definition spells out two important aspects of EMA, quantitative physical information (as in kg, joules, meters, lbs, etc) and monetary information. Such information is of primary importance because to manage and reduce the potential environmental impacts of an organisation's products, the firm must have accurate data on the amounts of waste and emission, both in physical as well as monetised amounts. Many companies are currently reporting on the physical quantities of resources used and waste generated. However, the monetised amount of these is lacking. Consequently, environmental issues remain the responsibility of HSE personnel (Health, Safety and Environment). It is only when we can start to measure environmental matters in terms of dollars that people will pay more attention to it. To do this, the focus should now move beyond simple corporate environmental reporting towards the development of an integrated environmental (management) accounting system. Such a system will be capable of assisting management in their day-to-day operations and strategic planning. In this, it is undeniable that the accountant should be an integral part of a company's process to improve both its economic and environmental performances.

> "… environmental matters are now regarded as strategic issues that go beyond mere compliance of environmental regulations. Thus, integrating environmental accounting into mainstream corporate accounting is essential."

Current accounting system: Its limitations

It has often been suggested that the current accounting system maybe ill-equipped to address environmental issues. The traditional system puts no emphasis on the environmental costs of an organisation's operations. Overhead accounts tend to include many costs that are product and process specific but not on the environmental consequences. More often than not, environmental-related costs are 'hidden' in overhead accounts. Given this, there is no incentive for managers to reduce environmental costs primarily because they are not aware of the extent of environmental costs. Further, the use of overhead accounts for environment-related costs can be problematic when overhead costs are allocated back to cost centres for product pricing. Hazardous waste disposal costs, which may be high for a particular product, may well be under-accounted, depending on the basis of overhead allocation. This will, eventually, lead to poor product pricing. Thus, an assessment of the relative importance of environment-related costs and cost drivers of different processes and product lines can help an organisation determine whether or not the cost allocation bases being used are appropriate for those costs. Having a proper EMA system would enable managers to make more informed decisions on such matters. The system, in providing a better analysis of environmental costs, may reveal opportunities that might increase revenues such as the recycling of raw materials, better product design and better manufacturing processes, amongst others.

The eco-balance account

The eco-balance account is a key tool for EMA. The account combines two control systems: traditional cost accounting and environmental management. Both these systems improve resource use efficiency. The primary difference between the two control systems is that while the traditional accounting system focuses on costs (i.e. monetary values), environmental management concentrates on physical units (Epstein and Roy, 1997). Recall that to improve material and energy conversion efficiency, a company needs quantitative information that focuses on both the physical units as well as the monetised amounts. Quantitative data is needed to identify problems and to evaluate the size and effect of the impact of environmental problems.

Additionally, quantitative data is also necessary to control and manage the company's production activities as well as evaluate its environmental performance. The adage "what gets measured, gets managed" is particularly pertinent. Finally, quantitative data is pertinent as a check on a company's compliance with relevant environmental legislations. Although collecting quantitative data, initially, may be time consuming, it is an important control tool. When employees are made aware of the resources consumed and the wastes generated (in both physical and monetary terms), they will be more involved in activities introduced for environmental (and economic) improvements.

Quantitative data can be converted to an eco-balance account by simply using the following equation:

Material Inputs = Product Outputs (good units produced) + Non-product Outputs (waste + emissions)

Material Inputs	Product Outputs (good units produced)
	Non-product Outputs (waste + emissions)

The above equation would enable employees to compare input and output data as well as provide an overview of the resources consumed and wastes generated. Thus, if a total material input is $50,000 (say 50,000 kg) and the value of materials in product outputs is $45,000 (i.e. 45,000 kg) then the amount of non-product output is $5,000. Consequently, when employees are aware of the resources consumed and waste generated, they would be able to monitor and control resources more efficiently. This would lead to better control of environmental issues, which will eventually enable employees to evaluate environmental problems and come up with possible solutions to address such problems. Referring to the simple example just described, the monetary amount of waste generated is $5,000 (or 5,000 kg) but the impact this amount of waste has on the total environment may not be reflected in the $5,000. However, having this information would provide an indication of a company's materials-related aspects of its environmental performance.

Core elements of EMA

The four functions that form the core elements of EMA are cost accounting, financial management, risk assessment and information systems. The cost accounting aspect refers to the tracking and analysing of environmental costs by identifying and monitoring all flows of energy and substances into, through and out of the company. Thus, all environmental consequences of the organisation, site or project should be assessed. The use of Life Cycle Analysis and Life Cycle Costing would be pertinent for this. Subsequently, the monetary estimates of environmental damage or benefits created by the organization, site or project, is determined. Environmental financial management covers the generation, analyses and use of environmental risk and liability information for investment appraisal and capital budgeting. Accountants can play an important role in estimating the potential cost of contingent liabilities to the firm and the risk factor involved. Finally, the company should develop a management information system to support environmental management accounting. Such a system will ensure that the information on the costs and benefits of dealing with environmental concerns is available, (on a timely basis) to relevant officers of the company.

Implementing EMA: The need for a multi-disciplinary team

Accountants may find that environmental matters involve applications of their professional abilities, which go beyond those currently required. These will include the design of systems, which are responsive to data from many sources in order to capture, measure, and report on the firm's environmental matters. Implementing an EMA system will require a team effort because expertise is needed from various professionals. The accountant will have to learn to assess and rely on the expertise of other disciplines such as engineers, biologists, geologists, lawyers, and to provide information that would be easily understood by those without an accounting background. Often, technical and environmental staff may have considerable expertise on the flow of materials, water and energy but are not aware of how these may be reflected in the accounting records. The accountants, on the other hand, have much of the accounting information but have scant knowledge of the environmental issues the firm faces. It is, thus, not surprising that accounting personnel are often not providing the types of accounting information that environmental and technical personnel might find most useful (IFAC's EMA Guideline Document, 2005, p. 26)

Further, much of the required physical accounting information unfortunately is not easily available to accounting personnel, as it is not systematically recorded or is not recorded in a way that reflects the real-world flow of materials. Personnel in other areas, such as production, environ-

mental or other operations, often have more detailed estimates and measurements of physical flows of materials, but often this information is not cross-checked with that of the accounting department. Accountants need to work more closely with personnel from other departments to accurately do the physical accounting side of EMA (IFAC's EMA Guideline Document, 2005, p. 30)

Thus, the emphasis on a multi-disciplinary team to implement EMA is clearly spelt out in the guideline. In addition, according to Boer, *et al* (1994), a company need not have a separate system primarily to capture information on environmental matters. The EMA system developed will have to be related in some way to the current accounting system. It does not make sense to operate two systems to gather environmental information. Environmental accounting information can be captured by adapting the current accounting system. Often, the present system can be modified by assigning a digit in an account code to identify a cost as an environmental cost.

WHAT ARE THE BENEFITS OF EMA?

The uses and benefits of EMA, presented in Figure 1, is reproduced from the EMA guideline of IFAC. Generally, EMA is said to assist companies in three broad areas. The first is compliance with environmental legislations (compliance efficiency). Secondly, EMA supports the reduction of costs and environmental impacts of a company's activities (eco-efficiency). Finally, EMA aids in the evaluation and implementation of cost effective and environmentally sensitive programmes in order to ensure a company's long-term strategic position. Most importantly, EMA helps management identify the various 'hidden' environmentally induced costs as shown in Figure 2. While the waste incineration cost may be transparent and one that most of us can relate to, the "hidden" costs such as the energy cost of wasted materials, purchase cost of wasted materials, cost of additional storage space for waste and various other environmentally induced costs may not be so obvious. It is these "hidden" costs that EMA can help companies track.

> "EMA supports the reduction of costs and environmental impacts of a company's activities … EMA aids in the evaluation and implementation of cost effective and environmentally sensitive programmes in order to ensure a company's long-term strategic position."

Figure 1 Uses and Benefits of EMA

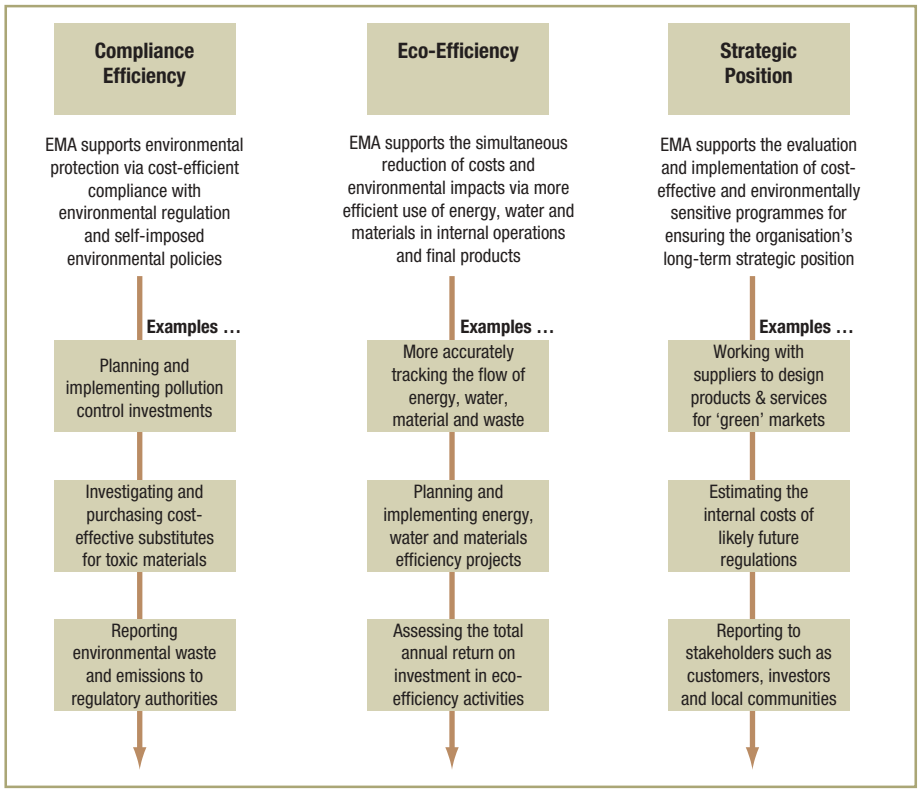
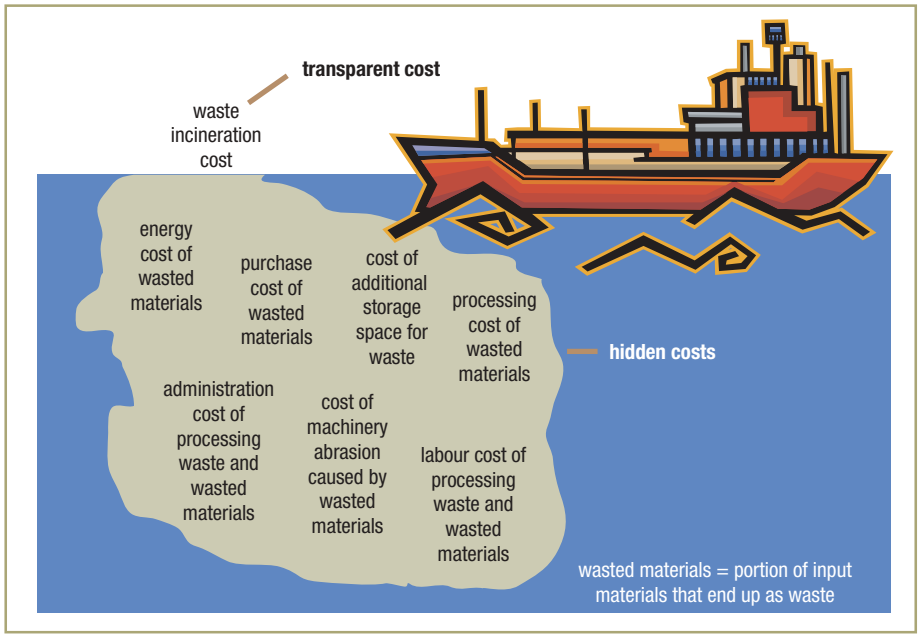


Figure 2 Transparent and Hidden Costs



(Centre for Sustainability Management, University of Luneberg, 2005)

CONCLUSION

Environmental problems are here to stay. Companies need to be aware that environmental initiatives are not necessarily financial burdens but can contribute towards financial value. Given that accountants are particularly good at integrating varied business functions from marketing to engineering, and since the environment is fast becoming another business function, it is only natural that accountants take on board this very important issue. However, it is generally difficult for a company's accounting group to make informed decisions on environmental matters because of the technical aspects involved. Hence, it is important that there exists personnel from various disciplines when tackling environmental issues. Most importantly, top management commitment is critical to the success of any environmental initiatives. According to the Business and International Institutes for Sustainable Development, companies go through 5 stages of environmental responsiveness. Figure 3 presents the 5 stages. It would be interesting to find out at which stage your company is currently in.

To be proactive on environmental issues, companies need to focus on various pertinent areas such as integrating environmental matters into capital expenditure decisions; understanding and managing environmental costs; introducing waste minimisation schemes; understanding and managing lifecycle costs; measuring environmental performance and to embark on a strategic approach to environment related management accounting and performance evaluation.

This article is just a short introduction of what EMA is. Readers may want to refer to the guideline for specific examples on how various companies have implemented EMA. Finally, we end this article with two quotations, one is the MacNamara Fallacy and the other is an African proverb. It is hoped that these quotes may help accountants put a proper perspective on issues pertaining to the environment, in general, and on environmental accounting, in particular. AT

The MacNamara Fallacy

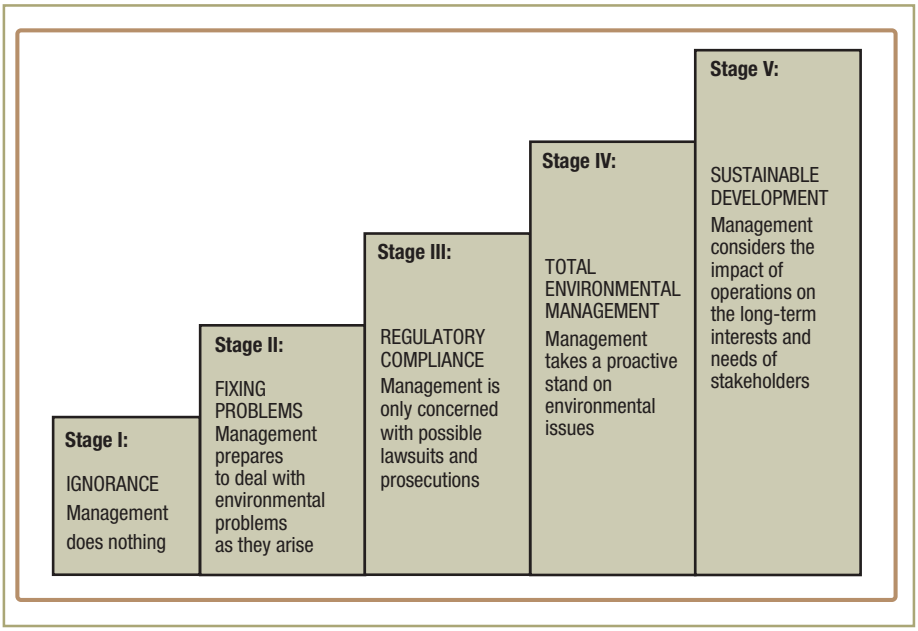
The first step is to measure whatever can easily be measured. This is OK as far as it goes. The second step is to disregard that which can't be easily measured or give it an arbitrary quantitative value. This is artificial and misleading.

The third step is to presume that what can't be measured easily really isn't important. This is blindness. The fourth step is to say that what can't be easily measured really does not exist. This is suicide.

African Proverb

If many small people in many small places change in a small way, the face of the earth changes.

Figure 3 The five stages of environmental responsiveness: At which stage is your company in?



References

Boer, G., Estes, R and Klammer, T., "Accounting and Pollution Prevention", *Management Accounting*, Montvale: February 1994.Vol.75 (8).

Bennett, M. and James, P., "The green bottom line: Management accounting for environmental improvement and business benefit", *Management Accounting*,London: November 1998.Vol.76 (10).

Dunk, A., "Product quality, environmental accounting and quality performance", *Accounting, Auditing & Accountability Journal*, 2002.Vol. 15 (5).

Epstein, M. J and Roy, M.J., *Environmental management to improve corporate profitability Cost Management*, Boston: November/December 1997.Vol.11 (6).

International Guidelines on Environmental Management Accounting, The International Federation of Accountants, August 2005.

Kreuze, J.G. and Newell, G.E., "ABC and lifecycle costing for environmental expenditures", *Management Accounting*, Montvale: February 1994.Vol.75 (8).

Lawrence, J.E and Cerf, D., "Management and reporting of environmental liabilities", *Management Accounting*, Montvale: August 1995.Vol.77 (2).

Willits, S. D and Giuntini, R., "Helping your company 'go green'", *Management Accounting*, Montvale: February 1994.Vol.75 (8).

The writers, Dr. Maliah Sulaiman and Dr. Nik Nazli Nik Ahmad, are from the Department of Accounting, Kulliyyah of Economics and Management Sciences, International Islamic University Malaysia. The International Islamic University Malaysia is the Malaysian chapter of the Asia Pacific Centre for Environmental Accountability (APCEA). Both authors have attended the EMA workshop conducted by InWent (Germany), Centre for Sustainability Management of the University of Luneberg and the Asian Society for Environmental Protection. The authors can be contacted at *maliah@iiu.edu.my* or *niknazli@iiu.edu.my*.