

## CHAPTER 6

### **Conclusions and recommendations**

Environmental accounting is a best practices technique for improved corporate management and reporting, however, the current application of environmental accounting in South Africa remains at low levels. This is primarily due to the lack of available and adequate South African environmental accounting systems and environmental impact data, together with the requisite of awareness regarding legal requirements and the need of enforcement of applicable regulations in general. The following are concluded about environmental accounting in South Africa:

- Environmental accounting is currently not being practiced in South African industries as a standalone decision making tool although the principles of environmental accounting are incorporated in some industries' overall environmental management and fiscal accounting systems.
- Environmental accounting must be implemented in South Africa to promote the integration of environmental and business best practices in the South African context of sustainable environmental management and business development. This is necessary to demonstrate the benefits of understanding the environmental impacts and costs associated with business activities and the potential for reductions in future environmental and social risks and liabilities.
- Valuing internal and external costs highlights those business activities where it is possible to exert most influence and obtain positive results for enhanced environmental and social best practices. There are many environmental, economic and competitive benefits that will be realised by those companies that explicitly value these costs in monetary terms. However, environmental accounting does not focus explicitly on exact values of external costs, but rather use relative costs to measure performance and highlight cost and risk reduction potential.
- Developing and implementing environmental accounting involves a gradual process of extensive data collection because the process of identifying and quantifying environmental and social impacts is so data intensive.

- The process of changing corporate culture and attitude is important to foster support and commitment to implementing environmental accounting in South Africa. The challenge here is especially to develop an appreciation for the benefits obtainable by implementing environmental accounting for informed business decisions.

The EEGECOST model was developed to promote environmental accounting in South Africa. The model has two functions; an accounting function, using a cost inventory to allocate environmental costs to specific cost types and cost drivers for informed business decisions and risk analyses; and a capital budgeting function, for investment appraisal. The EEGECOST model allocates environmental costs to Types I to V costs, categorised in environmental media groups. Within the environmental media groups, these costs are further allocated to specific cost drivers that cause the costs. Therefore, no costs are simply allocated to overhead accounts, which is usually the shortcoming of traditional fiscal accounting systems. Possible future risk and cost scenarios can be created in the model for up to four years. These future risks/costs are discounted to present values to create a basis for comparison between different years and for effortless risk valuation and analyses. The results of the EEGECOST model are summarised in report forms. These forms contain interactive graphs and tables for easy inclusion in management reports and presentations. The capital budgeting function of the model can calculate return on investment periods and internal rates of return on investments.

The EEGECOST model was used in a case study, based on the life cycle assessment of the cigarette production process. The case study has illustrated both the application of the model in providing a more complete picture of environmental costs and liabilities, and by including a routine that allows automatic ordering of defined future risks and costs according to user selected probability and consequence parameters, its use as a management decision making tool.

The case study proved the importance of accounting for all environmental costs, both internal as well as external and allocating these costs to cost types and cost drivers in a structured environmental accounting model. The case study revealed that Types III to V costs, usually not considered in traditional fiscal accounting systems, can contribute up to 8% of the total production costs of one million cigarettes.

Through implementation of suitable identified interventions and corrective actions, however, this contribution can be decreased to as low as 1%.

The EEGECOST model provides the framework for corporate evaluation of alternative projects and processes and for estimating economic and environmental performance in the present and especially the future. The model can assist South African industries in identifying, recording and allocating environmental costs within environmental media groups, using cost types and cost drivers, to enhance their corporate decision making processes. Implementing and applying the EEGECOST model as a standalone corporate decision making tool enhances risk analyses, corporate reporting and capital budgeting. The following conclusions are made regarding the EEGECOST model:

- The EEGECOST model assists environmental accounting in South Africa.
- Successful implementation of the EEGECOST model requires a team approach, with input from a wide variety of professionals in a company. These may include scientists, engineers, accountants and managers.
- The EEGECOST model is not solely an accounting system. It is a framework that can be used to consider the broader financial and environmental implications of business.
- The EEGECOST model considers both internal and external costs. The boundary between these costs need not always be static, but at times can be rather dynamic; given the rate of change in company policies and governmental regulations.
- Capital investment decisions are usually made within the financial sector of companies at present. However, if investment proposals are to be considered on more than just internal costs, there must be communication and collaboration between the financial and environmental decision makers in the company. The model therefore also attempts to relate financial and environmental investment decision making.

Direct benefits are therefore obtainable by implementing corporate environmental accounting and especially implementing the EEGECOST model in South African companies. The following guidelines will assist in successful implementation of the model:

- Establishment of company specific research teams and research programmes to evaluate the model and to implement it in the environmental management framework.
- Modification of a company's current environmental management framework and fiscal accounting system to incorporate the EEGECOST model.
- Initiation of internal communication and training programmes to support the model.
- Reporting the benefits of implementing the model to promote national environmental accounting initiatives.

The following recommendations will expand the model to enhance its credibility and increase its functionality as an environmental accounting tool:

- Further development of the model with respect to providing a clearer distinction between costs involving actual expenditure, provisions for contingency and external costs or virtual expenditure, as well as between income and expenditure items reflecting business performance and balance sheet items reflecting business conditions.
- Multiple case studies addressing a wider variety of industrial and/or manufacturing activities, as well as the application of the model during actual company planning and performance measuring cycles.
- Development of a database incorporating environmental media and social impact costs with extractable data that can easily be amended for company specific purposes.
- Advancement of the programme to a software tool for streamlining data input, increasing usability and enhancing output reporting and risk analyses.
- Augmenting the programme to support life cycle analyses and to estimate surrogate data for data not readily available.
- Enlarging the programme to support simultaneous analyses for comparison purposes and enhanced corporate decision making.
- As Type V costs are subjective, it is recommended that further research be conducted to structure an objective framework to evaluate and determine cost factors involved in the development of Type V costs.

The EEGECOST model was developed based on an holistic approach with simplistic operation, sufficient data input requirement, distinct cost allocation and output that will ensure usability for informed business decisions the main criteria. The user is able to tailor the model to meet specific product and project requirements based on company specific operations. The model succeeds in providing accurate and comprehensive environmental cost information to enable better decisions on corporate issues that impact on both a company's financial status and the environment. The model is valuable for management initiatives with a specific environmental focus, such as pollution prevention, environmental supply chain management, environmentally preferable purchasing and waste management systems. The model particularly brings focus to costs frequently not considered in fiscal accounting systems, such as contingent risks, internal intangible costs and costs associated with external impacts.