

## **CHAPTER 9**

### **SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS**

#### **9.1 INTRODUCTION**

The background situation pertaining to rehabilitation management systems in the mining industry in South Africa, in Africa and in the most highly developed countries of the world, namely Canada, the United Kingdom and the United States of America, was investigated. A comprehensive strategy has been developed for the implementation of a rehabilitation management accounting system in the mining industry. This strategy is aimed at both long-term and short-term planning for success, includes ways to implement these plans and is based on the management accounting dimensions of quality, cost and time.

This chapter contains a summary of conclusions reached in the previous chapters as well as recommendations that were made.

#### **9.2 CONCLUSIONS**

The general conclusion is that in highly developed countries such as the United States of America environmental management accounting is less advanced than one would have expected. Increasing interest in the natural environment would permit the evolution and development of environmental and rehabilitation management together with the development of the accompanying management accounting systems. These developments would in time lead to globally applied systems.

In South Africa in particular the most important developments have been the increasing promulgation of legislation by central authorities to prevent and combat pollution. The whole movement towards environmental protection could well result in enormous future financial environmental liabilities as well as control and failure costs if attention is not given timeously to preventive and assessment measures.

According to responses to the questionnaire from rehabilitation and environmental

managers in the mining industry in South Africa, there is a need for the implementation of a comprehensive management accounting strategy for long-term rehabilitation management. Consequently a system has been developed for the remediation and rehabilitation of mined-out areas in such a way that equilibrium will eventually be established between environmental rehabilitation programmes; the financial and non-financial implications; leadership; and the natural environment.

Rehabilitation management practices in the rest of Africa stem from a history and culture of inadequate rehabilitation policies, accompanied by improper cost management in both the short and the long term. This heritage still has an influence in local mining and rehabilitation attitudes and behaviour, and might still have an impact in future. These characteristics of the existing system coincide with the behavioural, cultural and technical attributes of a management accounting system as defined by Ansari et al (1997b: MMEC-14). In the long term this existing series of inadequacies could be improved upon by means of research and development programmes, and investments in environmental education and training. The implementation of technical features such as an extended relevant information system which would provide a better understanding of the processes of rehabilitation and environmental cost management would positively influence cultural perspectives and lead to improved behaviour in the form of more adequate decisions.

South Africa could benefit by researching and applying highly developed skills and technologies from leading developed countries such as Canada, the United Kingdom and the United States of America. Although South Africa is not far behind as regards technological developments in rehabilitation management in the mining sector, the management accounting profession in these developed countries realises the importance of continually improving the present systems of environmental and rehabilitation management, measuring and disclosing environmental rehabilitation efforts and encouraging and expanding the positive involvement of authorities.

The need to compile and implement a comprehensive long-term management accounting strategy for the mining industry in respect of rehabilitation and environmental management was followed up and proposals were made through the development of a strategy to satisfy this need. Although present rehabilitation policies are mostly within the limits of the law, and the important role of management accountants is somewhat neglected, their leading role as part of the management team is envisaged.

### 9.3 RECOMMENDATIONS

Recommendations following from this study are based on the fact that since sources of knowledge and information are inexhaustible, teams of rehabilitation management experts, including management accountants, should move between disciplines borrowing ideas, models and concepts. These various types of information instruments should be applied with care by management accountants, taking into account aspects such as communication and analytical skills, as well as strategic thinking and planning.

As part of the function of providing management accounting information for decision-making purposes, a comprehensive rehabilitation management strategy has been designed which provides for varying needs under different and changing situations. The following guidelines and contributions are included in this strategy:

- An appropriate background knowledge of the influences of time, cost and environmental perspectives would facilitate the production of information of a higher quality.
- A holistic view needs to be taken of the interdependence and independence of relevant aspects, including life-cycle costs, value-added activities, sustainability, the needs of the community, paradigm shifts, flexibility, the interests of stakeholders and the costs of the extended enterprise.
- Information and advice on improved cost management would include suggestions on adaptations to changed circumstances, target costing, total and full cost accounting, adequate feedback mechanisms and the extension of non-financial indicators.
- Control and failure costs could be limited if due cognizance was taken of the legal aspects of local and central authorities.
- Total quality environmental management approaches should be extended to include as many as possible of the instruments inherent in this proposed system by means of compliance with international standards, total quality control, and long-term strategies.
- Investments of money and time in education and training as well as in research and development would result in both financial and non-financial benefits in the long term, beginning with gradual changes in behaviour and cultural influences.
- Ethical aspects and the resulting welfare and well-being of the community should

not be neglected. A Pareto optimum position should be achieved; that is a position where no interested or affected party would be worse off owing to mining rehabilitation operations.

- Relevant information needs to be selected, providing for a better understanding of rehabilitation processes, and for continuous improvement and flexibility.
- Performance evaluation should be included from the initial planning stages, including both financial and non-financial assessments.
- Disclosure of rehabilitation and environmental input and gains, liabilities and projections in both historical and futuristic terms, should be encouraged.
- Both short-term and long-term financial input and gains are combined in the equilibrium matrix for the assessment of environmental excellence.

Since individual mining companies are operating under different circumstances and have unique rehabilitation and environmental problems, adjustments should be made within the wider framework. The provision of relevant information for management decision making would distinguish rehabilitation and environmental costs from traditional overheads and categorise them into prevention, assessment, control and failure costs. This would lead to a better understanding of these decision-making processes. A better understanding of these processes would change the traditional culture of values, beliefs and mindsets and lead to improved behaviour in the form of evaluation in non-financial terms as well financial terms and the more adequate allocation of rehabilitation and environmental costs.

#### **9.4 CONCLUDING REMARKS**

A general change of emphasis in management accounting could be effected, especially towards a more holistic approach which includes total quality environmental management and non-financial indicators. More emphasis could be placed on the interests of all stakeholders in the extended enterprise. This changed approach may be illustrated in the arena of rehabilitation and environmental management in the mining industry in South Africa.

A better comprehension of the rehabilitation process would indicate the causes of failures by identifying the various components of rehabilitation activities as well as the interaction between these activities. As a result of this information which is provided by the

management accountant, improved and altered beliefs would culminate in more adequate decisions on rehabilitation management.

The implementation of the developed comprehensive rehabilitation and management accounting strategy would set a system to work that would

- positively change the inadequate allocation of environmental costs
- make the invisible environmental costs visible
- positively change traditional values, beliefs and mindsets concerning environmental cost management
- include evaluations in non-financial terms as well financial terms

The increasing utilisation of technology and the evolution of expert systems would enable management accountants in the near future to expand on the basic environmental and rehabilitation management accounting strategy which has been developed in this study. They would have to design management information systems to meet new requirements, and to develop precisely the system required for their individual circumstances.

The correct and skilful application of management accounting instruments, especially in the form of the provision of relevant information, has the power to make environmental costs visible and to change traditional and narrow perceptions. This would lead to new ways of thinking and decisions that would enhance the wellbeing of all interested and affected parties involved in mining rehabilitation operations.