

## **Financial Accounting Parameters of Accounting for the Environment**

Ping Zhou  
Visiting Scholar  
Beijing Clothing Institute

G. R. Chesley  
Sobey School of Business  
Saint Mary's University

*Environmental accounting has been the subject of discussion for many years. Yet little discussion about what is needed to account for such activities is evident. This paper explores the current concepts to suggest issues needed for accounting to accommodate environmental interactions with a reporting entity.*

Environmental accounting is a commonly used set of words to signify how accountants can address issues covering the environment surrounding an organization or other entity for which accounting is conducted. Accountants can account for corporations, partnerships and proprietorships, individuals, not for profit organizations, and governments to mention some of the common organizations. Each of these individuals or organizations has an environment that surrounds it. Thus one might suggest that air, water, soil, minerals, flora and fauna represent the environment referred to by environmental accounting. Certainly accounting can represent some of the interactions, termed transactions and events, between an organization and some of its environment, particularly other organizations having economic interactions with the entity of focus. Economic, a term added here, refers to parts of the environment that provide or use limited resources captured by market prices. Transaction and event recording of economic interactions represent the backbone of accounting activities and reporting. Environmental accounting tries to extend the interactions beyond the usual market price economic interactions to include other interactions by the entity with its environment. The question remains, what extensions are possible and why is accounting restricted in its ability to capture environmental interactions of an organization.

Because there is a need to focus the analysis in order to make the discussion manageable, the following discussion will be restricted to financial accounting of profit oriented organizations. Financial accounting for governments and not for profits plus other types of organizations deserve exploration but would extend the discussion to an unmanageable extend. Specialized analyses and forward budgeting will not be addressed for similar reasons.

The explanations to follow will examine what concepts that underlie modern financial accounting restrict the accounting for environmental interactions. Such an analysis has been missing from the literature and is needed for the literature to explore the context of environmental accounting. (Berthelot, Cormier and Magnan 2003; Mathews 1997) The analysis

will suggest what changes will assist environmental accounting and what alternatives to traditional accounting are reasonable possibilities.

## **Financial Accounting**

Section 1000 of the CICA Handbook (AcSB) provides a succinct view of the concepts governing financial accounting by focusing on the financial statements usually thought to represent the nature of financial accounting.

Financial statements for general purpose reporting are titled a balance sheet, an income statement, a statement of retained earnings and a cashflow statement together with the cross referenced notes (footnotes) to these statements. The concepts suggest the purposes or objectives of these statements are to provide useful information to users, investors, creditors and their advisors, to assist the prediction of future cashflow and to assess the stewardship of management. These two objectives are presented by the concepts as being what is useful to the described users and thus the focus of general purpose financial accounting reports.

To appear in these statements, economic transactions and events must be recognized and satisfy the materiality and cost benefit constraints that override recognition. Unrecognized transactions and events can still be disclosed in the footnotes even if they are not recognized if they are useful information but such disclosures are not considered to be recognized in the financial statements. Rather they are referred to as being disclosed. Thus recognition and disclosure have different parameters. Disclosure can present environmental information as part of a financial report in footnotes, supplementary schedules and in management discussions but such environmental information would not be considered general purpose financial accounting. To be considered as financial accounting, recognition must occur. Section 1400 of the CICA Handbook (AcSB) provides a source for the current discussion on the subject.

## **Recognition**

Financial accounting for general purpose reporting to investors and creditors focuses on financial information about transactions and events that are material (significant) to these users, that satisfy the cost benefit constraint, and agree with the recognition rules. (AcSB, Section 1000, para .05) Because materiality and cost benefit are not specific in their parameters, the discussion of recognition will be used here to decide which transactions and events are included in the financial statements.

Financial statements are composed of elements or categories. (AcSB, Section 1000, para. 25) For an item to be recognized, it first must be an element even for special circumstances such as deferred revenues or expenses. (AcSB, Section 1000, para. 26) “Assets are economic resources controlled by an entity as a result of past transactions or events from which future economic benefit may be obtained. (AcSB, Section 1000, para. 29) First it should be noted that resources must be economic. To be economic, resources have to be received or expended by the entity to use the item. An economic good or service is contrasted to a free good where no resources are expended to acquire the item. Sometimes an economic or free good is described as a private

good or a public good, respectively. (Scott, 2003, p.159) A public good is one where the consumption by the entity does not eliminate it from use by another; thus it is a free good because economic resources are not required by the entity to consume the good. Environmental assets maybe fall in the category of a free good, for example clean air, and thus not represent an accounting asset.

Liabilities, a second major category, are obligations resulting from past transactions or events that may result in the use of assets or provision of services to settle.

Revenues, expenses, gains and loses are additional elements based on the receipt or use of assets or liabilities. Thus, their definitions do not need to be presented as part of the current analysis. (Section 1000, para.37 to 40)

Recognition of an element as previously defined requires the following:

1. an appropriate measure,
2. a reasonable estimate, and
3. an appropriate level of probability. (Section 1000, para. 44)

Measurement is the term applied to the amount recognized in the financial statement. Historical cost, replacement cost, realizable value and present value are the alternative measurements suggested. (AcSB, Section 1000, para. 53 and 54) Usually performance, ownership, sale or matching (allocation) are terms applied to specific recognition issues involved in with elements such as revenues, gains, expenses, and losses.

### **Recognition of Environmental Interactions**

Economic transactions by the entity that concern the environment can be recognized as one of the elements of financial reports if they result from market based transactions of legally separate entities (can include proprietorships). An entity can buy an environmental asset such as a piece of equipment or a license to pollute. An entity can pay a waste disposal company to remove waste products from its premises. An entity can sell a wind powered electric generator and have costs associated with the production, sale, and financing of such an environmental item. Economic transactions that have occurred can typically be recognized because their measurement is provided by the market.

Market transactions are normal economic activities that financial accounting has a long history of recognizing. Problems, however, can accrue with how these transactions are classified and whether they can be allocated so as to separate environmental from non environmental expenditures. For example, if a part of a piece of equipment is a safety feature or a pollution prevention feature, the question arises as to its future benefit. If it is purchased as part of the original equipment then the usual treatment is to consider it part of the asset cost. If an entity wanted to disclose the environmental portion of the transaction then it would need to allocate the cost of the equipment between environmental and non environmental elements, something that may not be possible without separate market prices for the components. If such an allocation cannot be done for the equipment when purchased, it will be unlikely the expenses of operation can be allocated to both environmental and non environmental components.

If the environmental component is purchased after the original equipment is purchased then an economic measure is available but it may be difficult to determine if a future benefit exists. A determination of a future benefit is necessary for it to be an asset. An environmental component without a determinable future economic benefit cannot be an asset (termed a betterment) but rather must be considered as expense (a repair).

CICA (1993, p. ii) suggests the need to consider changing the definition of an asset to permit betterment expenditures to be considered an asset even though they do not have a defined future economic benefit on the grounds that they represent an additional cost of the projected future benefit of the original equipment to which they attach. So far such a change has not been made.

### **Impairment**

If an entity pays too much for an asset because of the environmental cost then a write down is required because the benefit from the asset is less than the cost. (AcSB, Section 3063, para. 04) A grouping of assets is prescribed so that the need to allocate the future benefit attributable to the specific asset is minimized. Thus, an environmental component would need to be grouped with its associated asset so only the total future benefits would be required. Such a grouping practice suggests that a betterment previously discussed could be an asset if the group still has a total benefit in excess of its cost. (AcSB, Section 3063, para .12) Such an idea does contradict the expensing of environmental betterments because their specific benefits could not be allocated to the individual expenditure. Thus a contradiction in concepts exists that should be rectified to assist environmental recognition.

### **Liabilities**

Liabilities associated with environmental transactions require consideration of issues of when a transaction has occurred, what is the probability of the need to settle, and how to measure the amount.

Measurement of the amount of a transaction involves the question of most likely value or mean value or some other amount from a range of possible settlement amounts.

Such a probabilistic assessment of the measurement is likely for environmental obligations because settlements are likely to be uncertain in amount or timing.

The timing of a transaction can be an issue because the interaction with the environment may not trigger an obligation at the point of pollution. May be clean up is imposed later by government authorities or managerial decision. Thus when the environmental interaction actually constitutes a transaction can be a question in need of resolution in order to determine if a liability exists. Legal recognition can be later than moral recognition. The prominence of ethics has increased the importance of management discretion and its relation to when obligations originate, something environmental accounting would need resolved.

Asset retirement obligations (AcSB, Section 3110, in effect January 1, 2004) describe some of the issues of how to deal with legal obligations associated with the element of an asset. For example, what does a power company have to record costs associated with the cessation of a

nuclear power plant? Currently the standards suggests the legal obligation to clean up triggers an accrual based on the accumulated economic size of the waste from the reactor.

The current approach is to record an estimated liability in the period in which the obligation occurred. (AcSB, Section 3110, para .05) Traditionally (AcSB, former section 3061 was revoked March 2003 in favour of section 3110) this liability has been a restricted amount because of the lack of a treatment for the cost. The liability reflected only the operational charge accrued rather than the present value of the remediation cost existing at the balance sheet date. Now the present value of the cost is assigned to the asset to which it is associated. (AcSB, Section 3110, para .13) A lengthy discussion of the application of present values in the face of the uncertainty associated with the restoration cash flows (AcSB, Section 3110) will be omitted here for practical reasons. The amortization of the remediation asset records would record the cost of remediation as an expense.

## **Summary**

Accounting, in its general sense, operates on transactions and events that are organized and presented in general purpose financial reports that serve the needs of investors and creditors. If they satisfy the criteria of recognition as well as being material and having a benefit in excess of their cost of production, they will be part of the general purpose financial accounting statements.

For environmental accounting, a number of questions exist. When does a transaction occur? Legal enforceability instead of ethical or moral obligation seems to be the current norm. Given the emphasis on governance in current thinking, may be a redefinition of timing is appropriate.

A second question occurs with how to define a benefit. Is it a group benefit or must the benefit be defined for the individual environmental cost? Given the difficulties of allocation in the absence of market prices, maybe a group benefit is appropriate for environmental betterments.

Probabilistic measurements of time and amount would seem to be a well defined extension of usual measurements that could be easily employed. Such an approach to measurement would enable some measurement issues to be overcome for environmental interactions.

Extension of accounting to public or free goods by going beyond economic goods and services would seem to be difficult in that accounting has been wedded to economics because of the need to measure transactions using market prices. Such a tradition will be difficult to overcome for traditional accounting practice.

## **Extension of Traditional Financial Accounting**

A method that has been proposed to extend traditional recognition of transactions and events to reflect environmental interactions has been termed triple bottom line reporting. This proposed disclosure of different income amounts and a separate equity amount to reflect the monetized environmental and social costs is in reality the capital maintenance needed to sustain the organization. A credit to a capital maintenance reserve reflects the amount of social and

environmental costs of the entity that reduce the traditional income amount to a socially sustainable one. (Boone and Rubenstein, 1997)

Capital maintenance reserves are the focus of traditional accounting. Definitions of capital maintenance in North America have been nominal dollar financial and legal capital. Extension to social or environmentally sustainable capital maintenance would require accounting to reflect the stakeholder form of modern governance. Instead of a shareholder /owner focus, environmental sustainability of entity would be used to define what is free to the shareholder after other stakeholder environmental maintenance is satisfied. Nonmonetized environmental interactions would, however, still be ignored by this triple bottom line approach. Nevertheless, the definition of what capital is to be maintained would help implement triple bottom line reporting.

### **Nonmonetized Disclosure**

Disclosure of environmental interactions of nonmonetized amounts is required by reports to Environment Canada. (2003) Such information is part of the regulatory reporting of Canadian firms. Other reporting consistent with the International Standards Organization (ISO 14000) represents an alternative approach to nonmonetized disclosure focusing on the systems for environmental activities of the firm. Risk reporting, including environmental risk, is becoming common practice in management discussion and analysis reports. Given the need for comparability for such information to be useful to users, a standardized classification and presentation approach would seem to be in order. (GRI, 2002) Extension of such reports to balanced scorecard reporting of management stewardship would appear to be a reasonable direction because of the wide acceptance of scorecard reporting practices. (www.SAP.com) Exploration of some industry practices for nonmonetized reporting is a logical extension of the analysis presented previously in this paper. (Zhou and Chesley, 2005)

### **References**

1. Accounting Standards Board (AcSB), *CICA Handbook*, Sections 1000, 1400, 1500, 3063, 3110.
2. Berthelot, Sylvie; Cormier, Denise and Magnan, Michel. "Environmental Disclosure Research: Review and Synthesis." **Journal of Accounting Literature**, 22, 2003, 1-44.
3. Boone, Connie and Rubenstein, Daniel Blake. "Natural Solution." **CA Magazine**, May1997, 18-22.
4. CICA. *Full Cost Accounting from an Environmental Perspective*, 1997.
5. CICA. *Environmental Costs and Liabilities; Accounting and Financial Reporting Issues*, 1993.
6. Environmental Canada. *National Pollutant Release Inventory* [www.ec.gc.ca](http://www.ec.gc.ca) 2003.

7. GRI. *Sustainability Reporting Guidelines*. [www.globalreporting.org](http://www.globalreporting.org) 2002.
8. Management Accounting Guideline. *Writing and Evaluating Sustainable Development and Environmental Reports*. CMA Canada, 1999.
9. Mathews, M. R. "Twenty-five Years of Social and Environmental Accounting Research." **Accounting, Auditing & Accountability Journal**. 10, 1997, 481-531.
10. Scott, William R. *Financial Accounting Theory*, 3<sup>rd</sup> edition, Prentice Hall, 2003.
11. Zhou, Ping and Chesley, G. R. "GRI Guidelines- A Global Standard for Sustainable Reporting," Working Paper, July 2005.