CHAPTER V
THE POLLUTION PROBLEM AND ACCOUNTING

5.1. Social Responsibility of the Accounting Profession: It has already been discussed that the relationship of the pollution problem to accounting is indirect, since accountants generally are not major pollutors. Many business firms who are the employers and clients of public accountants have environmental problems. Accountants must be concerned with environmental problems because of the social responsibility on their part as distinguished from corporate social responsibility discussed in chapter IV. Business enterprises have pollution problems and accountants need to be concerned with the problems faced by their employers and clients. Here we examine the role of accounting in the field of pollution problem. Attention should be directed to the contributions of accountants, accounting firms, and also to the collective efforts of accounting organisations.

There is a growing feeling that social responsibility should be accepted by the accountants like any other professional responsibilities, just as there have been pressures upon corporations to assume a greater measure of social responsibility. An impressive list of civic activities can be presented by a typical professional accountant but he also needs to become more socially involved.

David Linowes, suggests three levels of social responsibility for the accounting profession:

(a) The social responsibility of the accounting profession to perform well its traditional assignments for those it serves — its clients.

(b) The responsibility of every discipline to probe new frontiers and expand the parameters of its work, to help to contribute to a better society.

The first category of social responsibility have long been accepted by the accountants and they have attempted to employ the necessary expertise in meeting the needs of their clients. The second and third categories of social responsibilities have been given recent emphasis.

Social responsibility leads into areas beyond the traditional fields of accounting. It is recognised that the services of accountants can be beneficial in solving many social problems, though there are unresolved questions as to how much of the various types of social responsibility the accountants should accept.

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5.2. A Role for Accounting: With ever increasing emphasis being placed on financial efficiency and value for money as representing the keys to social prosperity, during the 1980s, accounting inevitably came to occupy a position of prime importance in the public policy arena.

By the end of the decade, measures alternative to purely private profit had begun to achieve a measure of prominence due to concern over issues such as unacceptably high levels of pollution, natural resource depletion, global warming, deforestation, acid rain, etc. These ramifications intruded into public consciousness and finally into the political agenda. With the increasing influence of green (pollution free) consumerism and the emergence of a green

investment movement for pollution control, they have elicited a significant response from the business community. An ever growing number of companies felt the need to parade their green credentials and also have launched a series of green initiatives.

Such developments seem to have considerable repercussions for the accounting function. Particularly, companies now come to view their annual report and accounts as major medium of communication with regard to environmental and social issues and management information systems are designed to promote the green dimension to a central position within the corporate decision-making process. In the words of the President of the Institute of Chartered Accountants in England and Wales:

In responding to the challenges posed by the environment, which is our natural wealth, all aspects of accountancy including financial reporting, auditing, management accounting and taxation will have to change. In doing so, there will be an impact on all members of the Institute whether in public practice or in commerce and industry and whether working at home or abroad.

The recent learned papers on green accounting issues in professional journals, and the active involvement of the major professional accounting bodies in terms of funding research and establishing working groups, combining with the vigorous efforts of leading international accounting firms to corner the environmental audit market all tend to add credence to this particular view.

Whether or not one approves the attempts of the accounting profession to jump on the green bandwagon largely depends upon two widely diverging perspectives which are termed by Dave Owen as 'radical green' and reformist.

From the radical (or 'dark green') perspective, accounting may be considered as being a craft, or discipline reflecting our economic and social system - a system obsessed with the necessity for
economic growth. The French philosopher Andre Gorz points out:

...once you begin to measure wealth in cash, enough doesn't exist. Whatever the sum, it could always be large. Accountancy is familiar with the categories of 'more' and of 'less' but doesn't know that of 'enough'.

In other words, accounting is not able to cope with the notions such as 'sustainable' or 'sufficient' and is not so relevant to the central issues raised in the current green debate. The fundamental concern in Gorz's analysis, then, is one of clearly defining limits within which economic rationality and associated accounting techniques are to operate, rather than allowing its seemingly never ending expansion, and to reclaim other aspects of human activity as the preserve of moral or aesthetic criteria. The call for a spiritual re-awakening, central to radical green analysis, is clearly recognised in critiques of traditional economic thought such as provided by Schumacher. Daley and Cobb locate current environmental problems in the spiritual failing of western society. They offer a new pattern for economic and public policy issues underpinned by an insistence on the very need for a spiritual reawakening.

An additional point of departure for a prescriptive analysis of society's current environmental and social malaise from a radical ecology perspective lies in its rejection of the concept of economic growth as an important societal goal. This position is clearly encapsulated in Porritt's comment that

...if you want a simple contrast between green and conventional politics, it is our belief that quantitative demand must be reduced, not expanded.

To achieve such an end involves violent attack on the market system which means going beyond a mere critique of the rules of economics, or indeed of accountancy and needs nothing less than the invention of new institutions for a non-market economy.
Unfortunately, the critique of the radical ecologists doesn't extend to the elaboration of new 'accounting' systems which would operate in a non-market economy. However, there is a clear denial of the effectiveness of applying principles of neo-classical economics, via market-based incentives, towards the solution of environmental problems or indeed of seeking to develop an accounting response within this particular frame-work.

In sum, the above analysis clearly indicates that from the perspective of radical ecology, the environmental and social area is not the place for "economic rational man" and certainly not for accountants.

Noting accounting's newly won position of prime importance in the public policy arena, the reformist perspective suggests that accounting information is vitally important in moulding perceptions of what constitutes good or bad organisational performance. The strength of accounting lies in its ability to make visible and disciplined performance but conventional accounting techniques are heavily implicated in the current environmental mess we have got ourselves into, in focussing on issues of profit and efficiency, whilst ignoring social and environmental concerns. Some sixty years back a similar observation was made by John Maynard Keynes, when he noted that, "Under the peculiar logic of accountancy, the men of the nineteenth century built slums rather than model cities because slums paid". The reformist, therefore, goes onto argue that there is an urgent need to reform accounting practice so that the wider aspects of performance are captured and hence enter into the decision-making process.

Such a motivation sustained the efforts of accounting researchers in the 1970s who sought to develop workable social accounting performance measures and reporting techniques. The approach may be
labelled technocentric as it pursues a belief in the ability and efficiency of management to solve environment and social problems by objective analysis based on "better" information. Furthermore, a desire is expressed to accommodate such problems within the prevailing socio-political system, utilising a free market economy approach or via gradualist liberal reform of the market system. Challenge is therefore posed to prevailing economic orthodoxy, which is perhaps most notably propounded by the Brundtland Commission, suggesting that industry is both central to the economies of modern societies and an indispensable motor of growth.

The reformist approach is clearly, therefore, open to the allegation from those of a more radical persuasion of exhibiting a passive acceptance of the existing social and political context of corporate reporting so that any prescriptions derived for changes in accounting practice may be considered as merely an exercise in immanent legitimation. According to A.M. Tinker, such 'middle of the road' theorising is

prompted by concerns about what is politically pragmatic and acceptable, not what is socially just, scientifically rational, or likely to rectify social ills arising from waste, exploitation, extravagance, disadvantage or coercion. The net result, therefore, is that the palliatives advanced deal with symptoms not causes.

Exploring the Reformist Perspective: Whilst acknowledging the strength of the radical critique of the reformist approach, the potential implications for the accounting function of adopting such a perspective is nevertheless considered in the remainder of this chapter for the following reasons: -

First, though the radical ecology provides us with a fundamental critique of current patterns of consumption and production, very little serious thinking seems to have gone into developing actual strategies for change.
There are strong grounds to believe that our current environmental and social malaise is of such a magnitude that abstract theorizing provides an insufficient response and that by at least starting to move from the exclusive emphasis on short term financial performance the reformists begin to move a way towards practical change.

Secondly, the reformist approach is undoubtedly more in tune with influential current trends with emphasis on financial quantification and market-based incentives incorporated in the Pearce Report. The role of accounting in advancing such trends is evidenced by the espousal of the concept of 'best available techniques not entailing excessive cost' (BATNEEC) in seeking to modernize pollution control together with the emphasis on cost effectiveness. Gray points out that further implementation of ideas given in the Pearce Report will probably not be possible without both a voluntary response from organisations and especially some new environmental accounting systems to support them.

From a reformist point of view, the ever developing green agenda is significant for accountants and the accounting function both in terms of developing internal management information systems and external reporting practice. We shall now turn our attention to these two distinct issues.

Accountants must become involved in attempts to solve the pollution problem. Recent views suggest that such involvement is an important part of the accountant's social responsibility. Accounting expertise in connection with environmental problems is necessary to business firms just as much as in other matters requiring expenditure of company funds.

Many kinds of knowledge are needed to solve the pollution problem.
and an interdisciplinary approach works best. There are technological, legal and also accounting aspects. Accounting knowledge which already has been tested and proved useful in other applications is not only needed but there is also need for such accounting services over and beyond those that have become conventional.

The remaining pages of this chapter are devoted to answer the question as to what extent has the accounting profession responded to the challenge presented by the pollution problem. The attention is given first to contributions of accountants and accounting firms and then to those of accounting organisations.

5.3. Contributions of Accountants and Accounting Firms. Pollution problem has been dealt in books, magazines, newspapers and miscellaneous brochures. But only a small portion of these deal with the accounting aspects of pollution. Much attention has been given to the technological, legal, economic and even emotional aspects of the pollution problem.

Nevertheless, accountants and accounting firms play valuable roles ranging from the expression of theoretical views to the actual implementation of various projects. Highlights of some significant articles written by accountants are presented below as evidence of contributions of accountants and accounting firms toward solving the pollution problem.

**External Costs and Benefits**: James E. Parker contends that in the past financial accounting served society by providing information needed for capital allocation decisions but such information has been limited to cost and benefit data on the activities of individual business firms. For a more adequate decision framework

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the fact that ecological problems create costs which tend to fall under the classification of external diseconomies, and which are shown by economic analysis to distort the allocation of resources, would be taken into account. To continue accounting as a provider of information useful in making capital allocation decisions, external costs (and benefits) must be recognised so that resources can be allocated more efficiently.

According to Professor Parker, legislation, licensing and taxation are possible approaches to solve environmental problems. Information must be provided for proper use of any one of the approaches. The information could be provided in response to crisis situations but an established reporting system to provide information in a systematic manner would be used as an alternative. The need to know the cost to society at large resulting from individual actions create measurement problems in all three approaches. In decision-making, these social costs should be used but data are not currently available on a comprehensive and systematic basis. Collection of such data should be a team project of accountants, economists, engineers, political scientists, physical scientists and social scientists with their contributions of specialised abilities. This new information is presented in the reporting systems of business corporations, not as a substitute for, but as a supplement to the existing system. In conclusion professor Parker says, "if accounting is to continue to serve its social role as well as its private one, the scope of accounting must be broadened to include external costs and benefits".

Accrual Basis Accounting for Pollution Control. Beams and Fertig recognised social costs saying "Accounting information should

lead to decisions that result in the efficient utilization of resources, the conservation of the environment and the equitable allocation of business income". They are of the opinion that accounting contributes to pollution by not providing information about social costs. Accounting does provide data for decisions and so accounting is at least partially responsible if the activities resulting from these decisions disrupt the environment. To support this contention economic theory is called upon. Cost minimization is required for profit maximization at any given level of output. In determining the total costs of the firm, traditionally only private costs have been taken into account with environmental pollution being looked upon as a social cost not considered by the firm in making its production decisions. A firm trying to maximize profit is led to minimize its private costs by making excessive use and misuse of environmental resources when such resources are taken to be free goods. In this way, minimization of private costs increases social costs to the detriment of society. So, there is a new urgency for the accounting profession to play an active role in regard to social costs.

To the accountants, comparability in financial reporting is no new issue but now in connection with social costs, comparability problem arises in a different form. Social costs are currently omitted in determining a firm's net income. Some industries create more pollution than others due to differences in production processes. Again, the extent to which pollution problems are controlled varies among industries and among firms. The worst polluters could appear to be the most successful by minimizing private costs which are reported on the income statement by creating social costs which are not reported.

Beams and Fertig assert that comparability of financial reports can not be achieved only by disclosing the efforts of firms to neutralize pollution. Damage created by productive activities should be compared and can be achieved only by application of a fullfledged system of accrual accounting. Accordingly, pollution control costs in connection with current production should be treated as current product costs but as correction of prior periods' income if incurred for rectification of environmental damage from past production. Costs incurred for the neutralisation of future pollution should be capitalised and allocated to future periods which will be benefited.

Accountants Should Play An Active Role. Clark Chastain points to environmental requirements imposed by all levels of government on business enterprises. He contends that accountants should acquire knowledge of environmental standards and should also seek professional aid from other disciplines when uncertainty exists. Chastain indicates that by meeting the measurement and communication needs of society in regard to financial statements, accounting has evolved to its present status. Now accounting needs to communicate environmental information which society demands, to those who use financial reports. In internal accounting, this means that environmental control costs should be accepted as private costs rather than social costs, with the industrial accountant considering current environmental control expenses in determining net income, in estimating the future costs for budgeting, forecasting and decision-making purposes.

Public accounting is also affected. As business firms are required to comply with environmental standards, it opens new opportunities

for management advisory services. Audit division should be concerned with evaluating clients for environmental compliance. Chastain urges the accounting profession to look for and find out the opportunities available to develop guidelines for reporting and to take an active role to promote environmental control.

Accounting provides the mechanisms whereby the environment can be taken into the auditing procedures of companies. Though accounting draws heavily on the underpinning economic principles and conventions, it has a unique role to play within the greening process.

Standards for Measuring Social Performance: John Tepper Marlin says that better measure of social performance must be developed. One of the possible measures is expenditures for pollution control. The amount spent indicates what has been done but this measure does not reveal what has still to be done. Degree of compliance with pollution control regulations is another measure but as regulation and enforcements vary among the states, the usefulness of compliance as a control measure is limited.

Marlin proposes two measures. One of them is the state of the art control equipment. In this method, a company's existing pollution control equipment is compared with what currently represents the state of the art. The advantage of this method is that it shows the extent to which the company has introduced the best pollution control equipment available but it fails to show how serious the pollution problems really are. The second method is the acceptable emissions. Under this method, actual quantities of the various types of emissions are listed and compared with acceptable standards.

Role of Accountants In A Controlled Economy: The reality of peacetime price and wage controls led Leone and Weiss to predict that similar controls are also necessary in the environmental areas. They suggest that the role for accountants in a controlled economy is to define and measure the things to be controlled, to design and install systems for reporting activities, to provide feedback information for compliance and to recommend extension or relaxation of specific controls in certain areas.

Impact of pollution Control On Financial Statements: Thomas D. Wood looks pollution control from the point of view of the independent auditor and says that the auditor has a two-fold problem. The first one is to determine that pollution control costs are properly accounted for as capital outlays versus expenses outlays, etc. The second and the more serious problem is what should be the response of the auditor when pollution control is inadequate?

The urgency of the situation will depend upon whether or not the firm should achieve certain pollution standards by a deadline data, but in any case, the potential impact of inadequate pollution controls upon the business firm should be considered by the auditor. He should see that management has adequately disclosed pollution control matters and should also be prepared to modify his opinion if justified by the circumstances.

Role of a National Certified Public Accountant Firm in Water Quality Management: Accounting firms have undertaken assignments involving environmental matters. The experience of the Management

Advisory Services Department of one CPA firm regarding water pollution has been described by Henry S. Sawin. He outlines four major tasks, after presenting evidence that our environment is threatened.

(i) In the short run, pollution must be controlled through enforcement of increasingly stringent regulations. Here, current technology for pollution minimization and neutralization will have to suffice until those things that take longer time can be made effective - time does not permit waiting for a NASA-type effort to advance the state of the art.

(ii) In the short run, systems technology and the power of advanced computing hardware must be applied to the development of new approaches to pollution measurement and control.

(iii) In the long run, technology must be adopted which will minimize the creation of pollutants in the first place and will economically recycle more pollutants into consumable products.

(iv) In the long run, integrated ecological models must be developed which will incorporate information from engineering, the natural sciences, and social sciences to aid man in establishing a non-destructive relationship with the environment.

Sawin describes a programme developed by the Commonwealth of Pennsylvania. The programme utilizes system technology and advanced computer hardware for the measuring and controlling of pollution. The first of its type is the state-wide system for processing and retrieval of water quality control information. It is developed with financial assistance from the Environmental Protection Agency and also with professional assistance of the Management Advisory Services Department of Price Waterhouse & Co.

One of the two important objectives of this programme is the establishment of an information system for the Pennsylvania Bureau of Sanitary Engineering. The second objective is to adopt the system to other water pollution control agencies. The following

three underlying criteria were established to achieve the second objective and make the Pennsylvania system a demonstration project.

(i) Computer programs must be compatible with a second manufacturer's equipment. This will minimize rewriting of programs by another agency.

(ii) The system must be modular. This will permit others to adopt portions of the system without having to implement it in its entirety.

(iii) The system must have the ability to interface with the information systems of other agencies. This is being accomplished by the adoption of the uniform data elements and coding techniques which have been defined by the joint committee of State Engineers on Water Quality Management Data.¹

The Bureau of Sanitary Engineering operates five water quality programmes. These are water supply, sewage, industrial waste, bathing places, and mine drainage. The water Quality Management Information System maintains data needed for these water quality programmes making use of eleven subsystems. Price waterhouse supplements the systems analysis and programming effort of the state and also provide project supervision.

Sawin distinguishes between the role of the CPA in working with information systems to help control pollution and the role of the CPA as an auditor. In his opinion, many CPAs are concerned with information systems related to the environment dealing with solid waste control, water quality control and air quality control. According to him, as far as information systems are concerned, CPAs should attempt to be in the forefront.

In the opinion of Sawin, the role of the CPA is less aggressive and determined more by regulatory requirements as an auditor in

environmental matters. He also adds that the professional society should be the innovator and that CPAs who think changes are necessary should bring pressure to bear for the society to do some thing about it.

Role of a Medium - Sized CPA Firm in Environmental Matters:
Stanely L.Cohen is a partner in a medium-sized public accounting firm which has considerable experience in environmental matters. Its ecologically oriented services are divided into three main categories: financial advisory services, comparable cost studies and special studies. Cohen, the chairman of the Committee on Environmental Accounting of the Florida Institute of Certified Public Accountants and a member of the Committee on Environmental Accounting of the American Institute of Certified Public Accountants, says "The CPA has both a professional and human responsibility to participate in man's collective attempt to rebalance our ecology". A variety of topics in analysing ecological problems and their impact on the practicing CPA are covered by Cohen. He notes the failure to portray environmental concerns under accounting concepts and offers the following for consideration:

(i) Valuation of industrial property must certainly reflect adequacy of air and water resources and availability of acceptable waste disposal. How would deterioration be reflected on a company's balance sheet?

(ii) Determination of going concern assumes the ability of an enterprise to continue operations on a profitable basis. In order to insure this future existence, compliance with pollution abatement standards is mandated. Therefore, should not period costs be charged with a provision for funding pollution abatement facilities?

(iii) How can we compare financial data of business enterprises without knowledge of its environmental contamination practices?

(iv) If a firm has failed, over an extended period, to effectively control self generated pollution, asset values and prior earnings are overstated. How should these facts be reflected on the annual report?

Expansion of auditing standards to meet the full disclosure requirement of audit reports under auditing environmental compliance is suggested. A section dealing with environmental compliance incorporating the following might be added to the audit programme of the CPA:

(a) Obtain specific opinion of counsel as to compliance with federal, state and local environmental laws and regulations.

(b) Obtain from independent consulting engineer, retained by the company, a representation as to environmental compliance. Specifically, request data relating to existing or possible penalties or fines, design of new pollution abatement facilities, capital cost of such facilities, time schedule for the installation of such facilities and the operating costs of such facilities after installation.

(c) Secure representation from management as to need for any product redesign in compliance with environmental laws and regulations. Redesign costs, time schedules, etc. should also be obtained as detailed above.

(d) Review in detail the general ledger accounts, such as professional fees paid, plant property and equipment, etc., to determine if any fees were paid to engineers or attorneys for environmental services, or whether there have been any plant additions relating to pollution abatement. This may afford some insight into other areas worthy of extended audit procedures.

Contributions of National Accounting Organisations. It has been shown that accounting firms and accountants are working on solutions to the pollution problem. The emphasis is now shifted to efforts sponsored by accounting organisations. The efforts of some of the American accounting organisations which are national in scope are included. They are:

(a) The American Institute of Certified Public Accountants.

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American Institute of Certified Public Accountants. The American Institute of Certified Public Accountants formed a committee on environmental accounting in 1970. The committee was charged with the following objectives:

To compile information on the work being performed by CPAs in the area of environmental management and to recommend methods by which the resources of the accounting profession can be used effectively in resolving the ecological crisis.

The committee worked toward these objectives and issued a report which was published in *The Journal Of Accountancy*, in the May 1974 issue.

Environmental Management is described as the process of regulating man-made pollution with the goal to reduce and eventually to eliminate it. This is a shared responsibility of government, industry and the public. Environmental management are of two types: (a) to reduce or to eliminate existing pollution, and (b) to prevent new ventures from becoming pollutors. The latter is known as impact analysis which is a formal process of forecasting pollution implications.

There are four categories of environmental management costs:

a. **Damage Cost**: It results directly from a polluting activity and takes the form of property damage or impaired health.

b. **Avoidance Cost**: It is incurred to avoid or reduce damage cost.

c. **Transaction Cost**: It consists of resources consumed in making and enforcing policies.

d. **Abatement Cost**: It results from reducing the amount of pollution.

The certified public accountant has responsibilities to his client

2. William G.Gaede, Environmental Management - Opportunities for the CPA; The Journal of Accountancy 137 (May 1974), Pages:50-54
in regard to environmental management just as his responsibilities are in other matters. He must understand the different pollution control statutes and be able to assess their impact upon his client. The CPA needs pollution control knowledge to serve his client properly as management consultant, tax advisor and auditor. The committee reached the following conclusions based on surveys conducted in 1972 and 1973.

a) The number of environmental management engagements is small but increasing.
b) A firm need not be large to serve clients in the environmental management field.
c) Basic accounting skills often are adequate, but the accountant should know when to consult with those in other disciplines.
d) Planning and learning new information are needed to develop a practice in the environmental management field.
e) The accountant must recognise the limits of his professional competence and should know when to call in other resources.

To find out the opportunities for environmental management engagements, the following possibilities for assisting commercial and industrial concerns have been identified:

a) Performing economic studies to determine the feasibility of installing pollution control and recovery systems.
b) Evaluating the impact of new construction projects on the ecological balance of the environment.
c) Determining the impact on operating costs of installing new pollution control equipment.
d) Analyzing the cost impact of product profit margins for business meeting new environmental control requirements.
e) Performing studies to determine the appropriate treatment of corporate expenditures devoted to environmental preservation or improvement.
f) Expanding the scope of traditional financial audits to evaluate compliance with pollution control standards or
regulations and determining the associated costs\textsuperscript{1}.

The committee has also listed seven possibilities for assistance to governmental units.

American Accounting Association: It has done much scholarly research through various committees on social accounting in general as well as in the pollution problems in particular.

Measurement for social accounting was dealt in a 1972 report. The charge to the Committee on Measures of Effectiveness for Social Programs was the preparation of a report on the implications for Accounting of integrating into its formal structure and reporting process various non-financial statistics and measures those are essential to the evaluation of efficiency and effectiveness in social programs.

The report states that evidence revealed the crucial role of accountants in the measurement of effectiveness and / or efficiency of social programs. In the past, the accountants have tended towards conservatism and objectivity but currently they must also be willing to tackle the problems of measuring uncertain benefits and effects of social programs.

An indepth report on the accounting aspects of the pollution problem was presented by the committee on Environmental Effects of Organisation Behaviour in 1973. The charge to this committee was to develop measurement and reporting methods useful in communicating to internal and external users the effects of an organisa-

\begin{itemize}
\item \textsuperscript{1}William G. Gaede, \textit{Environmental Management Opportunities for the CPA}; The Journal of Accountancy 137 (May 1974), Page: 54.
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tion's behaviour on the physical environment. Attention was to be given to measuring and reporting the environmental effects of alternative modes of operations.

A brief summary of the major conclusions and recommendations of the committee on Environmental Effects of Organisation Behaviour is stated below.

In Section-III, Internal Reporting of Environmental Effects, the committee points out that both financial and non-financial information are required by managers in making pollution control decisions. The joint efforts of many disciplines will be required in gathering relevant information for decision-making because of the very nature of environmental matters. Conventional methods will be adequate for some decisions and there is a need for the development of new decision models.

Sections IV, External Reporting of Environmental Effects, is divided into three parts. Part-A : Nature and Importance: states that information on environmental effects is significant, its importance is increasing and most external parties are demanding more financial information on environmental effects. Thus, public accountants have to play a significantly greater role in environmental reporting if the principle of full disclosure is to be met in this area. In part-B : Measurement and Attestation: the committee could not discover reasonably accurate techniques for measuring the social costs of environmental damage caused by individual firms and stated that public accountants should not attempt to measure and report such costs at the present time but they should measure pollution abatement costs. Information on the measurement of environmental effects should include the past and

the current items and also the expected future expenditures which are liabilities arising out of past occurrences. Attestation of various non-financial measurements in addition to traditional measurements may also be required by the accountants. Some improvements within the present reporting model aiming at more adequate disclosure of environmental effects information are recommended by the committee in part-C, Analysis of Reporting Alternatives. There is also recommendation of verbal description of the organisation's activities in regard to the environmental effects of its activities.

Environmental implications for Accountants is divided into four parts in section-V of the report. First, with regard to the Audit Function, auditors must:

(a) Determine the nature of any pollution, whether legal controls have been imposed, and the progress toward compliance as a basis for attestation to the financial statements.

(b) Determine the amount of any liability for failure to meet deadlines or control standards. If necessary, the report should be qualified or adverse.

(c) Determine whether the firm has self-imposed control standards in cases where no legal controls have been imposed. If yes, the audit report should disclose the progress, costs to date and future outlay planned. If otherwise, the audit report should disclose the degree of pollution and warn of the impact of possible future controls.

The remaining three parts of section-V can be covered briefly.

Regarding Auditing Subculture, the issue of independence of the audit staff will arise because audit division needs assistance of environmental experts who are in the management advisory services division. With regard to Education, future accountant can expect a broader range of environmental problems, suggesting a possible

modification of educational programmes. With regard to Future Research, the committee believes that empirical research is required to test the practical feasibility of their recommendations.

National Association of Accountants: The National Association of Accountants established a Committee on Accounting for Corporate Social Performance in 1972-73. The committee submitted two reports. The first report was published in February 1974.

February 1974 Report: The objective stated in the report is to develop systems of accounting for corporate social performance. Purposes are classified into internal and external.

The internal purposes are:

i) to improve the decision-making process by:

(a) assisting in the process of establishing goals, objectives, and priorities in planning the use of monetary, physical, and human resources.

(b) educating and motivating managers to think through the social consequences of all decisions.

ii) to provide a basis for the continuing internal appraisal of social performance.

The ultimate external purposes are:

a) to provide consistent bases and reasonable uniformity for companies to measure social performance and to report to the public.

b) to provide a basis for independent attestation of corporate reports on social performance.

The procedures are:

a) Identification and classification of areas of corporate social impact which may be measured. These will require additions and deletions as social values change.

b) Development of objective systems of measurement which may be measured.

used in assessing corporate social impact. Such systems may be numeric, in monetary or in non-monetary terms, or descriptive.

c) Testing the categories of social impact and the feasibility and practicality of various measurement systems through empirical research.

d) Revising and refining the categories of social impact and systems of measurement as indicated by the empirical research.

e) Maintaining liaison with other professional and public bodies interested in the subject.

The second part of the report is a taxonomy on Areas of Corporate Social performance. Corporate activities have social and economic impacts. But established standards are lacking for measuring and reporting corporate social performance. Social performance reflects the impact of a corporation's activities upon society including economic functions and also actions which contribute to the quality of life.

The social relevance of conventional accounting should be recognised though corporate social performance is not now adequately reported. Since the potential for continued social contributions depends upon profitability, a corporation's net income has social significance.

Social performances are discussed under four major areas:

a) community involvement, b) human resources, c) physical resources and environmental contributions and d) product or service contributions.

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1. Accounting for Corporate Social Performance, Management Accounting 55 (February 1974) Page:39
For each of the four areas, examples of social performance are listed along with comments. As the third area (c) above is relevant to this study of the pollution problem for physical resources and environmental contributions, examples of social performance are listed below.

a) Air - Timely meeting of the law and going beyond the law in avoiding the creation of, alleviating, or eliminating pollutants in these areas.

b) Water - Timely meeting of the law and going beyond the law in avoiding the creation of, alleviating, or eliminating pollutants in these areas.

c) Sound - Timely meeting of the law and going beyond the law in avoiding the creation of, alleviating, or eliminating pollutants in these areas.

d) Solid waste - Disposal of solid waste in such a manner as to minimize contamination, reduce its bulk, etc. and the design of processes and products which will minimize the creation of solid waste.

e) Use of scarce resources - The conservation of existing energy sources, the development of new energy sources and the conservation of scarce materials.

f) Aesthetics - The design and location of facilities in conformance with surroundings and with pleasing architecture and landscaping.

The committee published a second report in September 1974. The report reviews purposes and procedures and the results of a mail survey of thirty selected companies. The response to the survey is interpreted by the committee as an indication of strong interest in social performance though some reservations were expressed.

In terms of frequency of activity reported in the survey, human resources ranked first and physical resources and environmental contribution ranked second.

The committee concluded that more intensive research is necessary

1. Accounting for Corporate Social Performance, Management Accounting 55 (February 1974) Page:41
2. Committee on Accounting for Corporate Social Performance, Management Accounting 56 (September 1974) Page:59
and it should continue its work. The following two research projects have been approved.


b) Accounting for Corporate Social Performance for Internal Decision-Making.

Survey of National Accounting Association Members: A survey of National Accounting Association members to complement the work of the Committee on Accounting for Corporate Social Performance was undertaken by Barnett and Caldwell. Highlights of the responses to eight issues relating to corporate social performance are presented below.

71 per cent of the respondents are of the opinion that there is a need to develop a system of accounting for social performance. According to a much larger percentage, there is a need to develop new forms of measurement including descriptive forms to supplement numerical measurements. The role of management accountant is viewed as educational and motivating and not merely as of primary authority and responsibility, with authority for development of a social performance information system vested in the topmost management. Respondents believe that though corporate social performance reporting is desirable for both internal and external users of information, it is more important to report to internal users.

Only 42.8 per cent of the respondents are of the opinion that independent audits of corporate reports on social performance should be an ultimate goal. There is a general agreement regarding

1. Committee on Accounting for Corporate Social Performance, Management Accounting 56 (September 1974) Page:60
relevance of profit for continued social contribution. Regarding
the scope of social performance, nearly 90 percent of the respon­
dents believe that the information system should be able to
measure the impact on society of both economic activities and
activities undertaken for the improvement of the quality of life.

The pollution problem is regarded as one of the major areas of
corporate social responsibility. According to 95 percent of the
respondents, a social performance information system should
provide a basis to report on physical resources and environmental
contribution.

5.4. Pollution Control Information System for Industrial Firms. A
pollution control information system for industrial firms
consisting of three phases have been designed by Needles, Caldwell
and William. The phases are: (i) the pollution abatement decision
process, (ii) the evaluation of alternative processes and (iii)
the establishment and maintenance of a pollution control
monitoring system.

The pollution abatement decision process is very complicated.
Traditional economic theory falls short as it is difficult to
equate marginal cost with marginal revenue, mainly due to
inadequate measures of benefits. A company considers pollution
abatement because of three factors: (i) social responsibility on
the part of the company; (ii) regulatory requirements established
by the central, state or local government; and (iii) public
pressures for pollution control. In making the decision, the
resource constraints face the firm. One constraint is monetary
because there is a limited amount of money which can be made
available and the other is technical. There are different methods

1. Adrew H. Barnett and James C. Caldwell, "Accounting for Corporate
Social Performance: A Survey," Management Accounting 56
(November 1974) Pages: 23-26
with different costs and/or levels of efficiency within the existing state of technology. A trade off between cost and efficiency usually is necessary. Generally, the greater the efficiency to eliminate the pollution, the higher is the cost. Tax considerations also enter into the decision process because there are various tax incentives as well as the possibility of penalties.

Evaluation of alternative processes assumes that the pollution abatement decision has been made. All of the pollution abatement alternatives should be recognised and evaluated. These alternatives are:

(i) The waste product may be processed into a useful product or recycled back into the system.
(ii) The useful output may be processed after it has been used rather than discarding it.
(iii) Production process may be changed to produce more useful output and/or less waste.
(iv) The input may be changed to a substance which results in less pollution.

To determine whether pollution abatement goals are being met, a pollution control monitoring system is needed. A monitoring system should have provision for collection of relevant data and for internal reporting to those who are concerned.

Management Information Systems (Internal Reporting) : It is clear that the accountant has a role to play in the initial stages of the 'greening' of organisations to develop information systems capable of capturing the cost effects associated with the adoption of pollution control measures.
of environmentally friendly practices. However, it would be excessively restrictive to see the accountant's role solely in these terms.

Gray has argued that while the accountants tend to overestimate their abilities in the sphere of attaching financial numbers to various aspects of business activity, at the same time, they probably underestimate their most important talent - that of designing, recognising, assessing and controlling of the information systems in an organisation. Much recent discussions have centred on how best accountants may employ these latter talents in the development of the environmental audit which is a prime tool for managing corporate environmental performance. Indeed, R. Adams has recently suggested that:

In order for creditable environmental audits to take place the process must borrow wholesale from the experience and expertise which accountants and accounting/auditing profession have developed over the years.

Environmental Audits: International Chamber of Commerce (1989) has defined environmental auditing as being

A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by: (i) facilitating management control of environmental practices and (ii) assessing compliance with company policies, which would include meeting regulatory requirements.

Recent surveys published by the World Wide Fund for Nature and the Green Magazine indicate the considerable extent to which leading British companies like Proctor and Gamble, ICI, Shell and Lever Brothers are beginning to employ environmental audit techniques.

Ideally, an environmental audit will entail the carrying out of a 'cradle to grave' assessment of how an organisation's activities affect the environment. For example, in the case of a manufac-
turing company, the assessment would cover: (a) the extraction of raw materials used in the production process, particularly taking account of the depletion of non-renewable resources; (b) directing the impact of the production process with regard to emissions, waste and land use with special attention being paid to the adequacy of risk management techniques for dealing with the dangers of environmental accidents; and (c) the utilisation and final disposal at the end of their useful life of the organisation's products.

The audit report should constitute not only a formal statement concerning the current status of compliance with statutory and other, possibly, internally derived requirements, but also a programme for future action.

Blaza's description of the integrated environmental review recently carried out by the UK subsidiary of Norsk Hydro provides an example of the practical application of such 'cradle-to-grave' audit procedures:

Each of the manufacturing companies was reviewed, firstly in terms of performance against the appropriate regulations. Both employee health and safety matters and the effects on the external environment were covered. The group's main products were subjected to an 'eco-balance' review, viz, the raw material and energy inputs required to manufacture them, their environmental impact in use, comparisons with alternative products and finally any potential problems after use, including waste disposal and potential for recycling.

The complete report once finished was subjected to review by an authoritative independent consultancy whose remit was to confirm compliance with the environmental, health and safety regulations, to validate individual reports and data, to investigate environmental practices on site and to make recommendations for change as appropriate.

There is a wide range of different types of environmental audit that can be carried out. This point is illustrated in Elkington's discussion of current practice at British Petroleum, although it should be noted that in each type the approach adopted follows a
common pattern based on gathering information by interview, site inspection and examination of relevant documentation.

The different types of audit currently used at British Petroleum include the following:

i) **Compliance Audits**: Relatively straightforward, though time consuming and covering compliance not only with statutory obligations but also internally generated corporate standards and industry level voluntary codes.

ii) **Activity Audits**: Evaluation of policy implementation in respect of activities that cross business boundaries, for example, group shipping operations.

iii) **Site Audits**: Spot checking at sites having actual or potential problems.

iv) **Corporate Audits**: Conducting an audit of an entire British Petroleum business sector, to ensure that roles and responsibilities are fully understood, technical and advisory support is available and all relevant communication channels are operational.

v) **Associate Audits**: Audit of companies acting as agents in overseas markets.

vi) **Issues Audits**: Focusing on specific key environmental issues like impact on tropical rain forests and an evaluation of policy, guidelines, operating procedures and actual practice within the organisation as a whole.

Essentially, environmental auditing methodology is mainly derived from longer established operational (or internal) and external compliance audit processes developed and refined over many years by the accounting profession. In outlining the approach to environmental auditing, the environmental auditor operates most effectively by tracking laid down management procedures and assessing whether they are likely to achieve their objectives and
whether they are being followed. So it is by virtue of their experience and expertise in the realm of information systems and control procedures generally that accountants can contribute considerably in the environmental auditing field, in spite of their lack of detailed technical and scientific knowledge in respect of the environmental issues themselves.

Whilst the majority of the literature on the development of internal environmental accounting and information systems and descriptions of practical corporate initiatives undertaken has focused on environmental auditing and review techniques, there are a number of other ways in which the accounting function can make contribution towards organisations becoming more environmentally sensitive. Gray provides a comprehensive analysis of possible developments in management information systems, out of which the following in particular appear to present potential practical opportunities.

**Energy Audits And Energy Accounting Systems** : Energy costs, a significant element of the overall cost structure for many manufacturing companies, has led to the undertaking of systematic energy audits with the object to account for energy expended in the provision of goods and services and more particularly, to pinpoint inefficiencies and consequent saving opportunities. Gray points to the fact that as energy can be reduced to universal measures (ergs, joules, etc.), some attempts have been made in the past to adopt a traditional accounting system with an energy accounting system, and that whereas these ideas had little impact at the time they may well be due for re-examination.

**Environmental Impact Assessments** : As environmental control regulations are becoming ever tighter, environmental considera-
tions are coming to feature significantly when new projects, necessitating planning applications are under review. Environmental Impact Assessments are carried on to evaluate the total possible impact a new project will have so as to predict whether the organisation is likely to fall foul of environmental planning regulations.

Environmental Budgets: One needs to be able to rank environmental criteria on some comparable level with the more traditional performance measures employed in order to integrate environmental awareness fully within traditional financial and marketing objectives. One possibility is the allocation of the levels of environmental activity along with other levels of budget allocation to activity centres and to tie in an element of the reward and penalty system to the satisfaction of allocated budget level. According to Gray, very few experiments in this area have reached the public domain and there is an urgency for in-depth field research to examine the feasibility and practicability of such ideas.

Environmental Hurdle Rates For New Investments: The conventional approach to discounting whereby uncertainty is handled by employing short-term pay back criteria and inflated discount rates, arguably discriminates against giving a fair weighting to environmental factors. For example, the future cost of safe disposal of an asset at the end of its useful life, may not be taken fully into account, whilst environmental projects with long gestation periods and low values in current prices, are undervalued. To use lower discount rates for particular environmental benefits ensure a significant present value attached to them, even if they were to occur many years in the future. Otherwise, it may be necessary to build qualitative criteria into
investment hurdle rates. Thus one can anticipate accountants becoming more concerned with the theoretical and applied development of investment appraisal methodologies capable of incorporating environmental factors.

The above outline of a few possible developments in internal reporting mechanisms, perhaps, indicates the considerable role accountants may play in 'greening' business organisations as well as in the complexity of the issues involved. According to Gray, other potential information systems developments, most particularly establishing mechanisms for monitoring the maintenance, enhancement and depletion of natural capital, introduce further complexities. At the present time there is a dearth of information in the public domain concerning practical applications of most of the suggested techniques. Thus, Gray argues:

There is a most urgent need for all these techniques to be explored, for experience to be shared and for experiments and research to be undertaken if we, as accountants, are to be able to contribute anything significant to the greening of organisations.

However, there is an urgent need for business organisations to convey information regarding the environmental and social impact of their activities to a wider audience via the external corporate reporting function. We shall now turn our attention to this latter issue.

1. External Reporting : Support for environmental initiatives is often accompanied by a profound reluctance to make detailed information on corporate environmental impact publicly available by the business community. Whilst expressing full support for the adoption of environmental auditing programmes by business

organisations, the International Chamber of Commerce (ICC) has, at the same time, seen fit to stress their role as being one of a purely internal tool whose findings are for the exclusive use of corporate management.

Brian Jenkins, Head of Audit at Coopers and Lybrand Deloitte, suggests that the issues covered in environmental audit reports are too 'soft' in many ways for a proper form of external public reporting and that inevitably such reports will descend to an unimaginative statement on compliance with rules rather than genuinely trying to add value.

The above views dismiss too readily the role of external reporting as a vital mechanism of corporate accountability. Jenkins is in support of some degree of public disclosure, particularly the publication of a statement of environmental policy within the director's report. Investors, to which the company is legally accountable, is increasingly calling for more detailed information than that provided by vague policy statements. Not only the newly emergent 'ethical' investor but also the more traditional, solely profit-seeking investor, express the desire to be kept fully informed on the environmental and indeed wider social impacts of company performance.

It would be unduly restrictive to focus sole attention on investors only when considering the issue of corporate accountability for environmental and other social impacts. As Gray puts it,

The environmental debate has raised a long stated concern that the race, the rest of life and future generations have significant rights to information about those things which may well affect their continued existence and will certainly affect the form and quality of that existence.

Such a view demands for the adoption of the concept of public 'accountability' put forward by the authors of The Corporate
Report some years ago. They suggested that there is an implicit responsibility for economic entities regarded as significant in terms of their scale of command over human and material sources such that their activities have significant economic and environmental implications for the community as a whole, to report publicly the effects of their actions.

The above analysis highlights the potential importance of external company reports as a means of accountability in a democratic society, with the capability, in particular, of influencing perceptions of business performance in the widest sense of the term.

5.5. Some Potential Pitfalls: The main task of this chapter has been to outline from reformist perspective, the potential implications for the accounting function of current trends towards heightened levels of green awareness throughout society. It has been suggested that the accountant can make a considerable contribution in the following two areas:

(a) To develop management information systems to assist organisations in responding at a micro level to the macro level initiatives introduced following the Pearce Report.

(b) The development of external reporting practice in order to promote public accountability, the need for which is clearly central to the emerging green agenda.

However, it should be noted that the pursuit of such development presents fundamental problems in terms of calling forth innovations in accounting theory and practice.

The history of past attempts to develop social accounting practice indicates that a major stumbling block is encountered in the

accountant's traditional obsession with, and insistence on, objectively verifiable and largely financially based measurement techniques. Schumacher pinpoints the dangers of seeking to press non-economic values into the framework of economic calculus:

All it can do is to lead to self deception or the deception of others; for to undertake to measure the immeasurable is absurd and constitutes but an elaborate method of moving from pre-conceived notions to foregone conclusions; all one has to do to obtain the desired results is to impute suitable values to the immeasurable costs and benefits. The logical absurdity, however, is not the greatest fault of the undertaking: what is worse, and destructive of civilization is the pretence that everything has a price or, in other words, that money is the highest of all values.

For accounting to make a real contribution to the green debate, what is called for is nothing less than a fundamental re-examination of the marginalist and neo-classical economic supports of the accounting craft whereby accounting can only operate when prices are generated by transfer of property rights in the market place. Whereas a financial figure can be placed upon items like clean up costs, it is not possible to price many elements of natural capital such as air, clean water, the ozone layer, etc. which are hence ignored by the accounting system and so treated largely as free goods with consequences which are becoming ever more apparent.

In addition to moving away from an exclusive emphasis on financially quantified 'bottom line' performance measures, since it is recognised that not all 'values' are quantifiable, other aspects of the traditional accounting framework stand in need of basic change in order to incorporate a green dimension. For example: (i) the emphasis on single time period, historic performance measurement, and (ii) the concentration on the economic entity as the focus of reporting.
The point here is that ecological issues are long term in nature and affect future generations whilst environmental impacts are 'externalities' as far as the entity itself is concerned.

Clearly, for such a fundamental re-thinking to take place green concern must be incorporated centrally instead of being treated as merely peripheral. Indeed, experience with the Corporate Report, where the accounting profession saw fit to give little urgency into the debate following publication of that document and broadly adopted a posture of sitting on the fence, gives reason for little optimism that things will be different in the near future.

Indeed, Jeuda (1980) is of the view that the real problem with the Corporate Report as far as the profession is concerned lies with the espousal of the concept of public accountability and promotion of the needs of other user groups together with the capital providers. Jones opines that the traditional concern of the accountant with the needs of financial capital may prove a major stumbling block in terms of incorporation of a green dimension into accounting practice. Jones conducted a programme of interviews with fifty seven accountants working in six large manufacturing and trading firms and elicited the overwhelming response that, in their view, profit is the prime, if not the only, goal of business and social responsibilities are deserving of a very low level of priority.

In sum, one may come to a depressing conclusion that both the nature of the accounting craft and the world view expressed by its practitioners represent major, or even overwhelming, obstacles on the way to the development of 'green' accounting. Whether an appreciation of the very real contribution that accountants can make to the greening of business will be sufficient to overcome these obstacles shall doubtless become apparent in the fullness of time.