MANAGEMENT ACCOUNTING GUIDELINES
MAG - III

IMPLEMENTING CORPORATE ENVIRONMENTAL STRATEGIES

The Institute of Cost and Works Accountants of India
(Statutory Body under an Act of Parliament)

Management Accounting Guidelines

MAG - III

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Issued by
The Institute of Cost & Works Accountants of India
(Statutory Body under an Act of Parliament)
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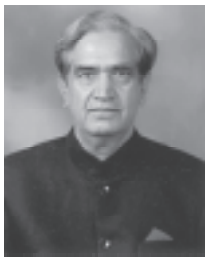

10 Sept. 2008

MESSAGE

Environmentally sustainable commercial exploitation of the global resources is the only way of moving towards future existence of the humanity. At a still larger level thinking, life itself can be supported and flourish on Mother Earth only if we are conscious of environmental degradation and the reversing processes we need to undertake. If we consider the damage caused to the flora and fauna in the last 100 years , it may be almost several times higher than what all had happened in the entire history of earth prior to that . It is clear therefore that this can be entirely attributed to the environmentally unsustainable commercial activities going at a mad frenzy across the globe further accentuated by globalization. This brings us therefore to the need for an environmental discipline in managing business.

This guideline brought out by ICWAI, a premier body of India effectively brings out in a structured way the maturity levels required in integrating with the environment while running any business.

There cannot be a better way of charting a pathway for setting corporate environment strategies. ICWAI has scaled a new dimension in its emphasis on resource utilization by linking environment to the domain which needs to be applauded by the policy makers.

In these days of voluntary compliances and corporate social responsibility it would be the most ideal situation if the corporate sector considers this guideline as a benchmark for declaring itself environmentally conscious enterprise. I would exhort the corporate sector to disseminate the guidelines in a very big way to its members through chambers such as CII, FICCI, ASSOCHAM, etc. They should escalate it to a level that the Management Reporting on Corporate Social Responsibility by the Board of Directors to the stakeholders declares itself on a self evaluation that it is in one of the stages proposed by the ICWAI guidelines on Implementing Corporate Environmental Strategies.

FOREWORD

One of the most devastating environmental disasters of all time, the 1984 Union Carbide plant explosion at Bhopal, forever changed the way corporations view environmental performance. At that time the fate of many companies hinged on the environmental strategies. After this devastation many companies have transformed themselves into environmentally progressive firms.

In today's volatile environment, the concept of "business as usual" no longer exists. Globalization, changing demographics and rapid advances in technology are altering the economic, social and environmental landscape at breathtaking speed. Organizations are reinventing themselves, integrating their business processes, have multi- disciplined teams, rely on strategic performance measurement that is embedded in each process. Environmental issues are not limited to now subject of study but Governments, Corporations and individuals are recognizing the benefits of environment sensitivity and environmental progress. Corporations are now treating as their social responsibility to keep surroundings "Clean and Green".

Guidelines contained in the book provide practical principles and recommended approaches for implementing a corporate environment strategy. The suggestions contained in the guideline can also help organizations to determine the need for a corporate environmental strategy.

I would like to place on record efforts put in by Mr. B.M. Sharma, Central Council Member & Chairman, P.D. Committee of Institute and Mr. Veerraghavan Iyengar in bring out these guidelines by the Institute.

I, on behalf of the Institute, acknowledge CMA, Canada for allowing the Institute to publish Management Accounting guidelines on "Implementing Corporate Environmental Strategies". These guidelines have been adopted by the Institute through P.D. Committee of the Institute. The guidelines contained in the book would be very useful for the Management Accountants, Regulatory bodies, Industries and other professionals.

Chandra Wadhwa
President

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PREFACE

This guideline is the first of a two-part series dealing with corporate environmental issues. There is an increased recognition of and concern for the fragility of the environment. The guideline provides practical operating principles and recommended approaches for implementing a corporate environmental strategy. This guideline is both descriptive and prescriptive. Its descriptive parts shape a vision of the future, build commitment for change, and define strategies. Its prescriptive parts address how to lead, plan, and implement a corporate environmental strategy.

Environmental strategies change management practices and systems based on the business implications of environmental issues. The focus is on the following : to seek competitive advantages by minimizing environmental impact through improved design of products, packages, and processes; to adopt a proactive, creative approach to ecological challenges throughout the company; to reduce costs by taking advantage of eco-friendly technologies and through energy and resource conservation;

Management accountants can play an integral role in developing environmental strategy, using these strategies to assist in policy and objective development as well as defining environmental measurement, analysis, and control.

I would like to place on record efforts put in by Mr. A. N. Raman Central Council Member of the Institute, Mr. Veer Raghavan Iyengar member of the Institute, CII and Ms. Nalinee Jagtap student of ICWAI in bringing out these guidelines by the Institute. We are also thankful to CMA Canada for extending their helping hand in producing the publication.

We are grateful to Mr. Chandra Wadhwa President of ICWAI , Mr. Kunal Banerjee vice-president of ICWAI, the members of Central council and the members of the Professional Development Committee in particular who have given their valuable Guidance and support in bringing out this publication.

Brijmohan Sharma
Chairman
(Professional Development Committee)

■

CURTAIN RAISER BY CONFEDERATION OF INDIAN INDUSTRY (CII)

Proactive environmental strategies have been proposed as profitable and sustainable ways for firms to deal with the environment issues. The voluntary approach towards implementing corporate environmental strategies (CES) shall pay-off in terms of social reputation, customer preferences and generation of organisational capabilities. The guidelines make explicit the relationships between business and society and the urgency of developing eco-sustainability measurements and strategies. A major challenge facing industries is to implement corporate strategy successfully, especially of strategies which reflect the increasingly diverse demands, such as those towards the environment, or with corporate responsibility. The guideline is both descriptive and prescriptive to improve environmental considerations into management decisions.

It has been found that "Decision makers" do not take into consideration the true extent of the difficulties associated with implementing environmental policies, and in particular do not make the necessary objective appraisal of the resources necessary. Also at times the management does not provide the ongoing support necessary for ethically oriented policies to overcome competing priorities within an organization, leaving operational managers with little choice but to pursue day-to-day objectives like efficiency and effectiveness, at the expense of the longer term gains that a fully integrated environmental strategy may provide. The guidelines has suggested several elements critical to designing an effective strategy, grouped into three stages; managing regulatory

compliance, achieving competitive advantage and completing environmental integration.

The environmental costs are either hidden in overhead accounts or are not recorded because they are not required in conventional accounting systems. The outcome is that companies, even though they may profess otherwise, have very little knowledge about their full environmental costs, cost saving opportunities, or how best to achieve cleaner production initiatives to promote corporate sustainability. Guidelines provide assistance regarding the role of the management accountant for developing environmental strategy, including areas that directly relate to environmental objectives, such as waste treatment, resource recovery, disposal, or site maintenance.

For industries having corporate environmental strategy, the guidelines further suggests integrating the principles of Sustainable development, for long-term economic growth.

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CONTENTS

IMPLEMENTING CORPORATE ENVIRONMENTAL STRATEGIES

INTRODUCTION

The environmental movement is no longer of special interest only to students and avid environmentalists. Governments, corporations, and individuals are recognizing the benefits of environmental sensitivity and environmental progress. Consumers are more responsive to environmental concerns in their purchasing, use, and recycling decisions. Corporations are recognizing the benefits to the community and to long-term corporate profitability of reducing their environmental impact. “Green” consciousness has grown. There is an

increased recognition of and concern for the fragility of the environment. Regulations and stricter regulatory enforcement are modifying organisational strategies. There is growing recognition of the concept of sustainable development, which teaches that the costs of tomorrow’s cleanup must be set against the profits of today.

Environmental protection and economic growth are becoming more closely aligned. Environmental technology companies are proliferating and more businesses are redesigning processes to reduce environmental impact, improve production efficiency, and reduce costs. The environmental agenda is quickly becoming an integral part of corporate strategy. Without a corporate environmental strategy, organisations will not understand legal, political, and financial

pressures, including strict liability, labelling standards, and packaging laws.

Some firms are just beginning to understand the importance of this interplay between strategy and environmental responsibility and of the effects of a changing and complex regional, national, and international environmental agenda. As regulations change, so will investor preferences. Managers must continue to learn and integrate new environmental concerns into corporate strategy. There are no final answers. There are, however, multiple opportunities.

The guideline provides practical operating principles and recommended approaches for implementing a corporate environmental strategy. These suggested approaches assume that the enterprise has decided to develop an environmental strategy. However, the suggestions can also help organisations determine the need for a corporate environmental strategy.

This guideline describes companies approaches to improving their environmental performance and to integrating environmental considerations into management decisions. The guideline suggests approaches that might be adapted and implemented by many types of firms: regional or international firms; companies with large Environmental, Health, and Safety (EH&S) departments or those lacking full-time EH&S staff. The approaches apply in both high- and low-environmental impact industries.

This guideline is both descriptive and prescriptive. Its descriptive parts shape a vision of the future, build commitment

for change, and define strategies. Its prescriptive parts address how to lead, plan, and implement a corporate environmental strategy.

The concepts and techniques included in this guideline apply to:

- organisations in the business and service sectors;
- government entities; and
- both large and small organisations. The concepts in this guideline will help management accountants and others
- understand key elements of corporate environmental strategies;
- appreciate the organisational and management accounting challenges in designing and implementing a corporate environmental strategy; and
- understand how a corporate environmental strategy relates to the organisation's overall goals, strategies, and objectives

This guideline is the first of a two-part series dealing with corporate environmental issues. The second document of the series is the guideline Tools and Techniques of Environmental Accounting, which focuses on environmental costing, capital budgeting, and performance evaluation systems.

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OBJECTIVES OF CORPORATE ENVIRONMENTAL STRATEGIES

Environmental strategies change management practices and systems based on the business implications of environmental issues.

Such a strategy helps change the corporate culture and establish policies. The strategy should integrate environmental concerns into managerial decisions in all parts and levels of the organisation.

Other objectives of corporate environmental strategies are:

- to recognize global environmental trends early and modify the company's plans accordingly;
- to increase stakeholder satisfaction and confidence;
- to improve long-term corporate profitability;
- to seek competitive advantages by minimizing environmental impact through improved design of products, packages, and processes;
- to adopt a proactive, creative approach to ecological challenges throughout the company;
- to reduce costs by taking advantage of eco-friendly technologies and through energy and resource conservation;

- to minimize risks arising from management of product liabilities, sudden changes in legal norms, sudden increases in ecology-motivated consumer demands, or changes in comparative risk assessments; and
- to ensure that the company meets compliance and due diligence requirements.

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THE ROLE OF THE MANAGEMENT ACCOUNTANT

Well-defined environmental policies and objectives support a firm's environmental strategy by providing guiding principles for employee activities. Management accountants can play an integral role in developing environmental strategy, using these strategies to assist in policy and objective development as well as defining environmental measurement, analysis, and control.

The management accountant's environmental roles vary with the type of job and enterprise. Ideally, management accountants should work closely with other multidisciplinary groups in areas pertinent to their individual enterprise's business lines. For example, the management accountant may:

- cost areas that directly relate to environmental objectives, such as waste treatment, resource recovery, disposal, or site maintenance;
- help resolve conflicts between environmental management and traditional financial management systems, such as those that occur in capital investment appraisal and capital budgeting;
- contribute to life-cycle assessment;
- assess potential liabilities of past practices;

- assess the need for new or modified management information and financial systems;
- consider the financial costs and risks associated with an investment that will likely cause or increase pollution; and
- make environment-related costs more visible.

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STAGES OF IMPLEMENTING A CORPORATE ENVIRONMENTAL STRATEGY

There are many approaches to implementing a corporate environmental strategy. Corporate experience suggests that several elements are critical to designing an effective strategy. These include:

- ensuring top management commitment and support;
- developing a corporate environmental policy statement;
- creating an environmental management system;
- preparing an environmental action program;
- establishing an environmental audit program;
- developing a strategy for external environmental reporting;
- designing products/processes that take environmental impact into account;
- integrating environmental impact information into management decisions;
- integrating environmental impacts into performance evaluation systems;
- generating revenue through recycling and waste management;

- introducing and marketing “eco-efficient” products and services; and
- integrating the principles of sustainable development

These elements can be grouped into three stages that firms use to design a corporate environmental strategy. While companies progress from one stage to the next, the boundaries between these stages are often unclear. Further, many companies find it advantageous or necessary to include certain aspects of each stage in early environmental integration. Customizing both the design and implementation of a corporate environmental strategy is desirable. Companies often straddle the boundaries between these stages.

Stage 1: Managing Regulatory Compliance.

Organisations acknowledge the financial implications of environmental matters; they realize the possible risks, such as litigation and cleanup costs, associated with current practices; they develop and publish a corporate environmental policy statement; and they develop partial systems to plan for and deal with environmental problems.

Stage 2: Achieving Competitive Advantage.

Organisations move from a commitment to comply with legal requirements to a realization that they can gain a competitive advantage by using resources more efficiently. While minimizing costs is the hallmark of Stage 1 organisations, Stage 2 companies focus on cost avoidance in life-cycle cost management and design for environment.

Stage 3: Completing Environmental Integration.

Organisations have fully integrated environmental components into corporate life. Environmental issues, large and small, are part of everyone's day-to-day decision making. Stage 3 companies create profits from antipollution efforts, "closed-loop" production, operational efficiency, and "eco-efficient" products and services. They recognise that long-term economic growth must be environmentally sustainable.

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IMPLEMENTATION GUIDELINES

Stage 1: Managing Regulatory Compliance

Ever-increasing numbers of EH&S regulations are forcing companies to change their practices. In Canada, companies are preparing to meet the current and future requirements of the Canadian Environmental Protection Act (CEPA) and provincial legislation like Ontario's Environmental Protection Act. In the United States, companies must comply with various environmental regulations, including the requirements of the Clean Air Act (CAA), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), the Superfund Amendments and Reauthorization Act (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Just as the United States set an example with its environmental legislation, other countries are pioneering approaches in such areas as packaging and environmental reports.

Voluntary systems such as the European Union's Eco-Management Audit Scheme1 are quickly raising the threshold for what constitutes acceptable environmental management. Asian governments are taking similar strides. Taiwan has overhauled its environmental administration and criminal enforcement authorities and is developing a comprehensive system of environmental regulation. Mexico is implementing a broad range of environmental regulations. Around the world, the watchword is "enforcement," or holding companies accountable.

Increasingly, global environmental standards are set by the most stringent country or region, because regulators often lack a scientific basis for defending lower standards and because environmental laws have become integral to international trade negotiations. As companies globalise their operations, they must maintain uniform standards among operations if they hope to manage environmental costs and opportunities uniformly.

The risks of failing to comply with these regulations have taken on new meaning. Large civil penalties are common. Penalties for environmental infractions have even moved beyond civil litigation to criminal sanctions that affect directors, officers, and employees throughout the organisation.

The threat of significant legal and financial liability, growing regulatory pressure, and pressure from communities, activist groups, and the general public have communicated a key point to senior management: environmental issues must become integral to overall corporate objectives and performance.

Stage 1: regulatory compliance strategies typically include the following actions:

- ensuring top management commitment and support;
- developing a corporate environmental policy statement;
- preparing an environmental action program;
- creating an environmental management system; and
- establishing an environmental audit program

Ensuring Top Management Commitment and Support

A corporate environmental strategy cannot be implemented successfully unless top management supports its implementation and demonstrates a consistent commitment to the concept.

The CEO is in a particularly powerful position to convince all employees and the company's other constituencies that environmental excellence is a corporate goal. The company must keep open lines of communication between EH&S executives and the CEO. The CEO must be involved in setting environmental management policies and making key environmental impact decisions. At Sun Company, for example, two senior management positions with direct access to the CEO have environmental responsibilities - Senior Vice-President and Chief Administrative Officer, and Vice-President of EH&S.

In his or her external role, the CEO works with the board of directors and other constituencies to convey the company's position on environmental issues to shareholders and, ultimately, to the public. Shareholders are demanding greater accountability for environmental programs and performance; the board of directors must be able to respond to these concerns. Thus, in their responsibilities as "overseers," board members must determine the effectiveness of the company's environmental programs and safeguards.

Developing a Corporate Environmental Policy Statement

While the CEO and other senior corporate officers must set the tone, they should do more. They can adopt a corporate environmental policy statement that conveys the commitment of top management. This statement becomes the foundation for developing all the organisation's environmental interactions and policies. It helps ensure consistency of approach and commitment at all levels: corporate policy and strategy, corporate performance measures, and business unit strategy. It will also serve as the principal signal to internal and external stakeholders of the seriousness of the organisation's intentions.

According to the Canadian Standards Association, [2] environmental policies should be built into all of the following:

- the organisation's mission;
- the organisation's vision;
- core values and beliefs;
- stakeholder requirements; and
- guiding principles

The responsibility for setting environmental policy typically rests with those with proprietary interests in the organisation or their delegates (e.g., a board of directors). The organisation's senior management is responsible for implementing the policy and for assisting in developing the policy.

Corporate environmental policy statements are often added to the corporation's mission statement in the annual report. Many statements are only a few paragraphs in length (see Appendix A); others are more extensive (see Appendix B).

An organisation can choose between two main routes in developing its corporate environmental policy statement. Some firms develop an organisation-specific policy. Others adopt a publicly established charter.

Organisation-specific policy statements can raise some difficult questions. For example, should the policy state that the organisation will comply with all laws, or even go beyond them? Since the public assumes that organisations comply with the law, the publication of such a statement may not be particularly impressive.

Another difficult question for multinational corporations is whether or not to adopt worldwide standards. IBM and Allied Signal, for example, have committed themselves to worldwide company standards. Even in countries with low environmental standards, their operations will follow the standards of the most environmentally stringent country in which the company operates. Other multinationals have not adopted this policy because they believe it will severely hamper their international competitiveness.

Instead of developing its own unique environmental policy, an organisation can adopt a publicly established charter. Environmental charters are public documents consisting of

guiding principles for areas of corporate planning, activity, and control in which environmental aspects should be incorporated.

Among the most prominent publicly established environmental charters is that of the Coalition for Environmentally Responsible Economies (CERES). First released in 1989 as the Valdez Principles, the

CERES Principles represent an “environmental ethic” devised to encourage the development of positive programs to prevent environmental degradation, assist corporations in setting policy, and enable investors to make informed decisions about environmental issues.

Preparing an Environmental Action Program

While an environmental policy statement provides direction, it lacks specific targets against which to measure progress. In order to translate a policy statement into specifics, an organisation must create an environmental action program.

An environmental policy statement may specify that the firm will “continually search for and adopt emission reduction methods.” This provides direction but leaves the firm without details on how it will implement this policy or how it will measure progress. This is the purpose of an environmental action program.

An action program is particularly important because discrepancies between the company’s environmental policy and performance, and local deviations and avoidances, can be uncovered by audits and noted in the press. This can

damage the credibility of the organisation's overall environmental strategy.

A well-developed environmental action program will contain both strategic and operational planning components. Effective environmental action programs:

- are soundly linked to business strategy;
- prioritize the goals of the corporate environmental policy;
- prioritize the goals of the organisation in terms of the policy;
- identify interactions throughout the organisation and harmonize them;
- turn the goals into specific targets;
- give the targets completion dates;
- assign environmental responsibilities;
- provide for feedback and reward;
- provide training and resources to support the required actions; and
- monitor performance;

The Canadian Standards Association describes environmental goals as" the overall aims in terms of environmental performance arising from the environmental policy" and targets as "the detailed performance requirements which an organisation sets out to achieve."

Examples of goals arising from an environmental policy are: conduct formal training of all plant-level managers in roles and responsibilities for achieving company objectives; and conduct systematic risk assessments of all the company facilities, processes, and products.

Targets should be measurable and expressed in quantitative terms. In addition, targets need to include a target date or a time frame over which they will be achieved. For example, the environmental target might be to reduce hazardous waste by 60% within 12 months, or to lower pollution reduction costs after two years to no more than x per cent of sales and/or unit costs.

To prioritise its corporate environmental policy goals and targets, an organisation should consider:

- what key environmental concerns confront it;
- what environmental opportunities it perceives; and
- how it balances stakeholders' conflicting demands and concerns about environmental issues.

Successful organisations understand which environmental concerns most apply to them and focus their programs in those areas. They also look for environmental opportunities that match their strengths and long-term business strategy. For example, a public utility company with several thermal power plants and a large vehicle fleet would concentrate on air emissions. A fast-food chain that lacks plants and manufacturing operations may focus on solid waste, particularly food product packaging.

By assessing the environmental risks associated with their activities, processes, products, and services, organisations can identify the environmental impact of their activities on various stakeholders and their potential legal and business exposure.[3]

Exhibit 1 shows the types of stakeholders that organisations consider most often in assessing their environmental risks. The left side of the exhibit focuses on visible stakeholders, such as bondholders, shareholders, management, and the board of directors, who have a direct financial or contractual interest in the organisation. These stakeholders also assume a major contractual interest through bond or stock ownership –a development that affects organisations' environmental strategies, policies, and implementation processes. In the next column are interdependent stakeholders such as employees, customers, and suppliers.

Exhibit 1: The Stakeholders of the 1990

Visible		**Invisible**	
Economic Interest		**Survival Interest**	
Contractual	Interdependent	Current Generation	Future Generation
Bondholders	Customers	Impact Zone	Spokespeople for
Shareholders	Suppliers	Other Users of	the Unborn
Management	Employees	Shared Resources	Spokespeople for
Board of	Government Local Community and Region		Plant and Animal Life
Traditional Stakeholders			

Source: Adapted from Rubenstein 1994:60.

On the right side of the chart are the invisible stakeholders, divided into two categories: current generations and future generations. Invisible stakeholders include those in the direct impact zone of industrial activity - the humans and other species that breathe the air and drink the down-stream water. Current generations also include other users of shared resources. On the far right of the exhibit are the future generations, including spokespeople for the unborn and for the preservation of plant and animal diversity.

Balancing the conflicting demands of these different stakeholders is a key challenge in establishing priorities and making resource allocation decisions. For example, capital investments in innovative waste - reducing manufacturing systems may seem right to the local community that wants reduced emissions, but may also appear to reduce short-term profitability, which affects shareholders.

Measurement of environmental impact can be so difficult that useful information will seem impossible or too expensive to obtain. In these cases, merely identifying the impacts often serves to alert organisations about the impacts of their activities on stakeholders. In some cases, useful measures will be available and impacts can be quantified using physical measures or monetised using financial measures.

Many companies conduct periodic community surveys to help them determine the public's perceptions of their environmental impact. These surveys assess public opinion on the company's performance in such areas as air quality, water quality, and land and soil quality.

Some companies encourage public participation in their decision-making process. Leading companies such as Dow include Citizen Advisory Panels (CAPs) in their environmental management system. Others practise community outreach by, for example, providing environmental assistance to small businesses or to surrounding communities.

Appendix C provides a suggested checklist for assessing environmental action programs.

Creating an Environmental Management System

Corporate environmental policy statements and action programs are important for organisations. Another key is to develop a support system through an effective environmental management system (EMS) that can anticipate changing regulations; social, economic and competitive pressures; and environmental risks.

Effective corporate EMSs contain numerous elements that span all aspects of an organisation's operations. These elements, which are critical to implementing the environmental strategy throughout the organisation, are:

- policies and procedures;
- employee buy-in to the vision;
- alignment and integration;
- accountability and responsibility;
- management information;
- training and management development;
- performance measurement;

- monitoring of trends;
- formal risk management systems; and
- emergency preparedness.

Policies and procedures that clearly define the organisation's goals and expectations are essential. These can be communicated in a variety of formats, including books, brochures, slides, videotapes, electronic files, and corporate magazines.

These documents should discuss the policy that establishes the main framework for the beliefs and expectations of the company. They may be complemented by written procedures at the facilities level or by issue - specific policies.

Employee buy-in to the vision

All employees must understand and accept the importance of achieving the organisation's environmental objectives. Corporate-wide "buy-in" to the vision is critical to its successful deployment. Some large companies have discovered that it can take four or five years to build the understanding and commitment of all employees and that, without buy-in, the desired goals remain illusory.[4]

Alignment and integration

The effectiveness and success of environmental initiatives depend on how well individual elements of the organisation's EMS and the organisational structure support each other. Management system elements that may require integration include: information systems; reward and

performance appraisal systems; training and development; resources; and the accountability structure.

Accountability and responsibility

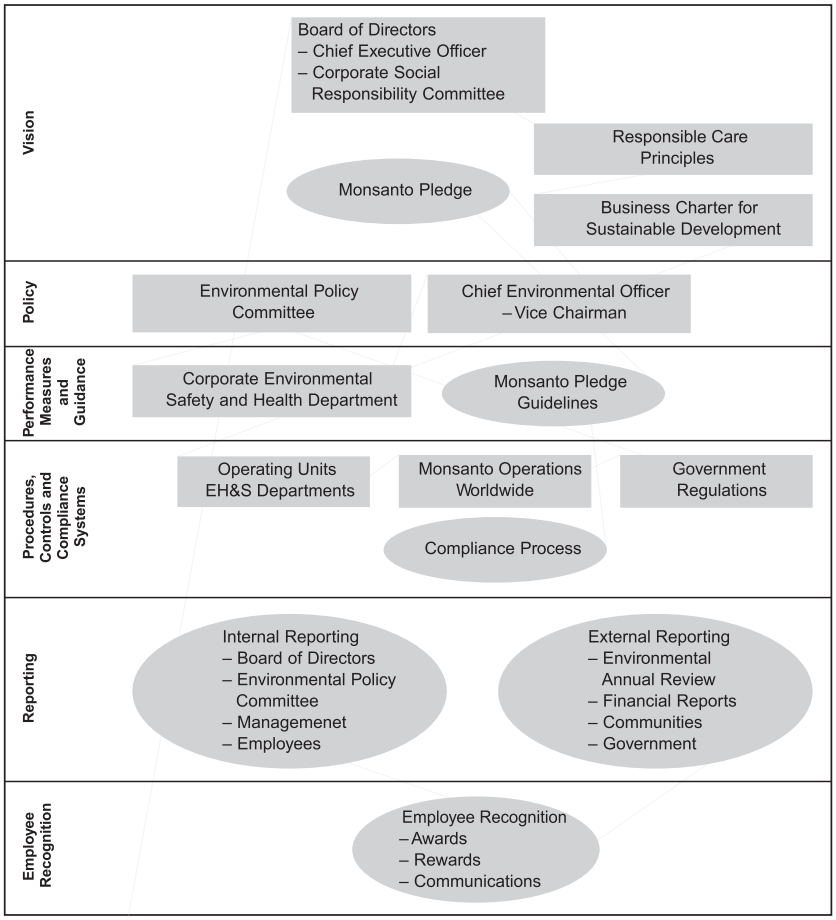
Accountability, responsibility, and commensurate authority for the overall effectiveness of the EMS must be assigned within the organisation. In small organisations, one senior person usually assigns accountability as appropriate throughout the organisation, monitors the effectiveness of the EMS, and reports environmental performance to senior management.

Large organisations usually establish an oversight committee - often called an Environmental Steering Committee - to co-ordinate the organisation's environmental efforts. This committee usually consists of key senior managers from all departments to ensure that environmental concerns throughout the company are addressed. These committees are ongoing, hold regular meetings, and prepare periodic reports.

Exhibit 2 illustrates the EMS for Monsanto, a large multinational corporation. Monsanto clearly identifies the roles of senior executives and other officers and employees in developing an environmental strategy (vision and policy) and in executing that strategy (performance measures, procedures, controls, and reporting). The system demonstrates an environmental management approach that attempts to drive environmental responsibility and sensitivity throughout the organisation. Responsibility for environmental management is not isolated within one functional area, but integrated across the company's business processes. From the foreman to the

operator on the floor to the materials manager who handles hazardous waste, employees know that they are directly accountable and responsible for maintaining high standards in environmental management.

Exhibit 2 – Monsanto's Environmental Management System



Source: Epstein 1995.

Management information

A key element of EMS is management information. Managers require information to make informed trade-offs between cost and environmental control. An effective environmental management information system tracks and disseminates environmental data on a cross functional basis, and provides relevant environmental cost accounting and performance data.

Training and management development

Implementing new environmental policies requires the efforts of all employees from senior managers to shop floor workers. Employees must be trained and sensitized to how proactive environmental strategies and policies benefit society, the company, and themselves.

Most people need time, with appropriate support, to accept their personal responsibilities and to relate them to their work with others. When employees are given this opportunity (often as training, skill development, and ongoing education), the company gains a number of benefits, including stronger commitment, more energy, greater willingness to relinquish old ways of doing things, and a new determination to make the changes work.

Performance measurement

An important element of any management system is to establish short- and long-term goals with appropriate measurable milestones that are supported and periodically

reviewed by senior management. Environmental performance measures give managers insight into manufacturing and other processes and track progress.

Environmental performance measures should focus on quantifiable metrics to gauge specific progress. For example, firms might measure the number and quantity of spills, energy use reduction, volume of waste generated, or amounts of disposed or recycled materials. Some firms also employ benchmarking to evaluate and measure performance.

Relevant performance measures are often Relevant performance measures are often the necessary link between developing a company's environmental strategy and implementing that strategy successfully.

In order to keep abreast of change, the company must continuously improve all aspects of its EMS.

Monitoring of trends

Besides measuring their environmental performance, organisations need to monitor changes in the business or operating environment. Management must identify and track emerging issues that might affect the company, understand emerging laws or regulations, and, in some cases, identify and use a competitive advantage created by an environmental issue.

According to the CSA, monitoring should include the following:

- emerging/growing environmental concerns in specific areas;

- potential regulatory developments;
- market pressures;
- changes in sensitivity toward the environment;
- information on technology improvements;
- information on competitors; and
- changes in stakeholders' expectations.

Formal risk management systems

Risk management systems are required to inform management about the company's EH&S risks; their relative importance; and how they are being managed. Under this umbrella, a company identifies hazards and assesses risks regularly - acknowledging that they change.

The risk management system ensures that the company has set priorities and allocated resources to address the more serious risks quickly. It tracks performance in dealing with these risks and reports that information to top executives. Where appropriate, it secures insurance to share liability.

Emergency preparedness

State-of-the-art EMSs include plans for responding to environmental incidents. Handled improperly, these incidents can threaten a company's future and shatter its reputation.

Emergency response systems should include operations and management components. On the operations level,

emergency response plans ensure that facilities are prepared for fire, explosions, releases, spills, and other incidents, and that they comply with regulations for emergency response planning, including transportation-related emergencies. On the management level, emergency response or crisis management entails clear plans for decision-making and communications. For a company to show the public that it understands what is happening and is taking the right steps to handle it, that company must understand and take the right steps - which requires high-quality information from the scene, the ability to make decisions rapidly, and the willingness to speak directly and appropriately to public concerns.

For any firm, creating an EMS that will best provide guidance and incentives for improving corporate environmental performance will not be easy. Additional complexities arise as firms increase their business and geographical diversity and must address particular business needs, local laws, different cultures, and different requirements of a variety of stakeholders.[5]

Establishing an Environmental Audit Program

Environmental audits are conducted in response to broader pollution control legislation and regulation - much of which carries increasingly burdensome fines, penalties, and orders.

More companies are concluding that comprehensive environmental audit programs are an effective approach to loss control. The costs of designing and implementing such a

program are relatively small compared to the costs associated with non-compliance and remediation of releases to the environment. Firms are also beginning to understand additional benefits of environmental auditing, such as increased access to capital, reduced interest and insurance rates, and conformance to due diligence requirements.

Environmental auditing has three broad aims:

- compliance with regulatory codes;
- assistance in acquisition and disposal valuations; and
- corporate development toward the organisation's environmental goals and objectives

Exhibit 3 shows the broad characteristics of these objectives.

There are many types of environmental audits. They vary with the type of business being audited, the reason for the audit, and the depth and breadth of the audit. The main environmental audit types include:

- compliance audit;
- EMS audit;
- transactional audit (due diligence audit);
- treatment, storage, and disposal facility audit;
- pollution prevention audit;

- environmental liability accrual audit; and
- product audit.

Exhibit 3: Environmental Audit Program Objectives

General Category	Specific Areas
Compliance	Legal conformity
	Anticipated conformity with liability for new regulations
	Review of mitigative and ameliorative programs
Acquisition/disposal	Sale of facility
	Acquisition of facility
	Valuation/appraisal of property for
	Insurance
	Loan security
Corporate development	Monitoring corporate environmental policy and procedures
	Establishing baseline for development of green corporate environmental programs
	Assessing control system adequacy

- Implementing and reviewing corporate environmental program measures

  (mitigation and remediation)

- Assessing risks in unregulated areas

- Improving product or process quality through response to environmental impacts

  (especially buildings, landscape, large engineering works)

Source: Ledgerwood 1994:67.

Compliance audit

The most common environmental audit is the compliance audit. Environmental laws can impose joint and several liability, retroactive liability, and civil and criminal penalties for non-compliance. The compliance audit procedure includes a detailed, site-specific audit of current, past, and future operations. In general, locations or facilities are prioritized and scheduled for audit based on their potential risks. Compliance audits are normally programmatic and address many issues. They review all environmental media that the site may contaminate, including air, water, land, and waste water.

EMS audit

Evaluating management systems is a crucial component of any environmental audit. Evolving regulations and directives acknowledge this importance.

Focusing on management systems can identify the typical underlying causes of non-compliance with environmental regulations. Remedying management deficiencies can result in long-term, lasting improvements in environmental compliance with external requirements and internal policies. An environmental audit verifies the existence and use of appropriate on-site management systems.

Transactional audits

Assess the environmental risks and liabilities of land or facilities before a real estate acquisition or business divestitures. These audits are important because both sellers and buyers want to know the extent of any liabilities due to environmental contamination.

Treatment, storage, and disposal facility audit. Regulations often require that hazardous material be tracked from “cradle to grave.” Although companies that produce hazardous waste material may contract with other companies to store, treat, or dispose of that material, companies are still liable for any environmental damage that might be caused by the “handling” company. Some companies conduct audits on their own facilities and on facilities that handle their hazardous waste material.

Pollution prevention audits

Pollution prevention audits are designed to avoid or minimize the creation of pollutants and waste at the source rather than at the "end of pipe." Pollution prevention opportunities can be identified throughout the production process. Companies examine whether pollution can be prevented through capital improvements, process improvements, or product improvements. Companies conduct these audits because they recognise that eliminating or reducing waste usually provides positive financial returns, especially when compared with cleaning it up or disposing of it at the end of the production process or after it has been released into the environment.

Environmental liability accrual audit

These internal audits address the issues of "probable and estimable" in determining environmental liabilities to be accrued for financial reporting. They are an important accounting obligation. The internal auditors often seek assistance from independent technical professionals (such as consulting engineers) for verification and to demonstrate due diligence.

Product audit

Some companies perform audits on specific products and their distribution to determine whether they should do more to make them environmentally friendly and to confirm that they are meeting product and chemical restrictions. These audits

also assess packaging materials for their recyclability or recoverability. Product audits have resulted in the development of products, including refrigerators and automobiles, with higher recyclable content. The audit examines the environmental impact of the product including packaging and distribution.

Besides helping organisations identify and correct potential environmental risks, environmental audits provide several other benefits. These include increasing staff awareness of environmental issues and of the organisation's responsibility to the environment; raising the firm's positive community profile through affirmative environmental action; and making suggestions for more efficient and cost-effective use of available energy resources.

Environmental audits should be independent of the business units and should belong to a more comprehensive program of evaluating the environmental performance of the business unit, the facility, the strategic business unit manager, and other management and staff. In order to provide incentives to improve environmental performance, these audits must also be part of an established comprehensive performance evaluation system such as an entity's internal audit program.

The organisation's EMS depends on an audit program that empowers employees to detect and report environmental problems. Even regular and effective internal and external audits cannot detect all violations.

Plant employees are in the best position to detect and report hazards. Companies now recognize that identifying environmental hazards before they occur typically costs less than cleaning up later. An effective environmental audit system includes employee and facility self-audits, and extensive company internal audits and an external auditor. These systems usually cost less than the costs of clean-up and violations.

The EH&S auditing framework at Dow Chemical integrates a variety of types and frequencies of audits to monitor overall company compliance with government regulations, industry initiatives, and company standards. These audits range from daily self-assessments to a detailed external audit conducted by a consulting firm. The self-audits consist of equipment inspections, job procedure checklists, and other routine daily practices. The external audits are conducted by outside consultants, government agencies, and other experts for the purposes of insurance or International Organisation for Standardization (ISO) [6] certification. Periodically, the company conducts comprehensive internal environmental audits; less comprehensive inspections and equipment checks are conducted as necessary.

No generally accepted standards exist for the conduct of internal or external environmental audits. How the audit is conducted often depends on who is doing it. Despite differences in audit approach and philosophy among audit practitioners, several fundamental principles for conducting audits are emerging[7].To be effective, the audit program must

be supported at all levels of the organisation, implemented by experienced personnel, and followed up with action.8 Above all, the program should be consistent with the organisation's risk management philosophy.

Off-the-shelf environmental auditing software holds the promise of expediting the entire environmental audit process. Several well-known comprehensive environmental audit programs are now available.

Stage 2: Achieving Competitive Advantage

Many organisations fail to see the rationale for spending any more money on the environment than required. But they now see peer companies addressing the environment as a competitive issue. Timing is a critical consideration: should the company take the risks of setting a trend or should it take a more cautious approach while observing what does or does not work for other companies? The right decision for each organisation will reflect not only corporate culture, but also what the organisation must accomplish in environmental management to satisfy its stakeholders' needs.

In Stage 2, organisations move from making a commitment to comply with legal requirements to recognizing that hazardous and non-hazardous waste are items akin to poor inventory control. If organisations control their pollution costs better than do their competitors, then reducing the cost of waste confers a competitive advantage. The focus in Stage 2 is not on complying with government regulations, but on reducing corporate environmental impacts to move the

organisation toward more efficient resource use and increased profitability.

Stage 2 companies also realize that implementing proactive environmental programs can enhance their corporate image with the public, customers, suppliers, employees, and investors. This is particularly important when a positive image can increase market share. Such a program may be critical for publicly traded companies whose stock value is influenced by their public image and for industries that face public opposition due to perceived environmental hazards.

Stage 2 competitive advantage strategies typically include the following actions:

- developing a strategy for external environmental reporting;
- designing products/processes that take environmental impact into account; and
- integrating environmental impact information into management decisions.

Developing a Strategy for External Environmental Reporting

Discerning investors, particularly institutional investors, are keenly aware that environmental deeds will peak much louder than environmental words. Environmental concerns are no longer a peripheral consideration. They are becoming a measurable mainstream factor in directing the flow of future

investment into the marketplace. Corporate responses to investors and other stakeholders' demands for more information on corporate environmental performance vary widely. Stage 2 companies are better able and more willing to expand their coverage of environmental issues in their annual reports. They see substantial benefits, both to their companies and to various stakeholders, in producing environmental progress reports. These reports satisfy financial disclosure requirements and meet information demands of financial analysts, environmental activists, and other stakeholders. They also help secure a company's competitive position by communicating the firm's real commitment to continuous improvement.

For example, a global EH&S report issued by Dow Chemical and Dow Canada tracks the company's progress in pollution control and prevention, sustainability, environmental partnership programs, emissions reduction, energy efficiency, and health and safety issues. It tracks the amounts of emissions for a variety of chemicals and the company's progress toward environmental goals. The report also explains that Dow regularly performs EH&S audits that managers use to continually measure progress against expectations.

While it appears that separate environmental reports and external environmental audits are becoming more prevalent, there is justification for including all disclosures in the corporate annual report, which is more widely read and more central to the evaluation of corporate performance. Allied Signal, for example, has chosen to expand the discussion of corporate

environmental performance in its corporate annual report rather than issue a separate environmental report. This is the company's way of signalling the importance of environmental impacts to the company's "overall business strategy and operations responsibility."

Preparing environmental reports for external use, whether it be the EH&S report or the inclusion of environmental liabilities and expenditures in the annual report, requires a specialized knowledge of environmental issues, law, and accounting. Generally, no individual or department has this knowledge; the process should be a joint effort among individuals and departments that share the knowledge. Some companies have also included feedback from stakeholders in deciding what to disclose in the environmental report and the corporate annual report.

At Sun Company, for example, the external environmental report is prepared by individuals from corporate communications, finance, legal, and EH&S. The process for the accrual of environmental liabilities for the annual report also involves cross-functional integration. Staff from EH&S, legal, and management accounting meet monthly to discuss present and future environmental liabilities and possible disclosures required to fulfill regulatory requirements. Though standardized external environmental reporting has yet to be established, numerous organisations have been working diligently to develop a format that would be acceptable to the producers of the reports and useful to the various users. Others have instead been encouraging companies to increase disclosures without suggesting standardized formats.[9]

Designing Products/Processes that Take Environmental Impact into Account

Concern about post-consumer waste, recycling, reuse, and proper disposal is rapidly increasing. Consumers and governments are demanding lower-impact products.

An example of government demands is the use of take-back legislation. Take-back legislation requires that a company take back specified components of a product after the consumer finishes with it. The most notable example is the German requirement that companies selling products in Germany collect and recycle their packaging. New laws across Europe will soon compel manufacturers of everything from autos to telephones to take back used products.

Companies wishing to compete globally must start making products that will comply with the green dictates of the huge European market. Stage 2 organisations are responding to this issue by designing their products and processes to be more environmentally sensitive. For example, Hewlett-Packard has redesigned its office-machine packaging worldwide in order to meet German requirements.

Design for the environment (DfE) is emerging as the term describing the philosophy of integrating environmental considerations into the design process. DfE calls upon product designers to factor the following considerations into their planning (the same considerations also apply to packaging design):

- The production process. Among the issues to address are:
  - *Raw materials usage*. Is the company using renewable resources whenever possible? How extensive is the demand for non-renewable resources? How can the company minimize its use of raw materials (renewable and non-renewable)? What alternatives are available?
  - *Energy consumption*. How much energy is consumed during the production process? How might the company reduce energy consumption? What are the energy sources? Might the company use more environmentally benign energy sources?
  - *Pollution prevention.* Does the manufacturing process reduce the creation of air and water emissions? What is the quantity and composition of those emissions? Is the company using appropriate technologies to minimize emissions?
  - *Solid waste.* Are raw materials being used effectively, i.e., is there minimal scrap? What waste, if any, might the company reuse? How does the company dispose of solid waste?

- Designing for pollution prevention. What are the implications of manufacture and use for the quality of air, water, and soil?
- Designing for resource conservation. Are recycled materials used whenever possible?[10]
- Designing for disposal. What are the environmental impacts of the product once it reaches the end of its useful life? Among the issues to address are:
  - Landfill issues. Can the amount of waste, by weight and volume, be minimized when the product is disposed off?
  - Incineration issues. Incineration of products should not produce toxic by-products.
- Designing for non-disposal. To what extent is the product reusable or recyclable? Ideally, durable products should be designed for long life. Can the product be upgraded with new, improved parts or systems that further reduce the product's environmental impact and comply with new regulations?

The automotive and photocopier industries are among the leaders in DfE. In 1993, Ford issued DfE guidelines to its suppliers to improve the recyclability of its vehicles and to increase the recycled material content. Nearly 80% of the content of its new cars can now be recycled. The company also uses many recycled materials in producing its automobiles, including 54 million recycled soft drink bottles to produce luggage racks, reinforcement panels, and door padding.

Outside of the manufacturing sector, service companies have found numerous opportunities to reduce their environmental impact. Just as consumer products manufacturers and distributors have changed product packaging, restaurants have reduced their packaging and often made other significant efforts to reduce environmental impacts.

For example, in its McRecycle USA program that began in 1990, McDonald's replaced its polystyrene clamshell and coffee cup containers with paper wraps for sandwiches and clay-coated paperboard for coffee cups.

As part of its program for reducing environmental impacts, The Body Shop has implemented an environmental accreditation scheme for its suppliers. This scheme grades external suppliers based on predetermined criteria with a 0-5 star rating and has focused on raw materials and third party manufacturers.

By developing corporate environmental strategies and policies that are oriented toward environmental planning rather than compliance, companies can substantially reduce environmental impacts through process and product designs. Product quality, production yields, and profitability can be increased and waste can be reduced or eliminated. By striving for continuous environmental improvement, both environmental impacts and corporate costs will usually decrease. Companies are recognizing that, by focusing on process and product design rather than on pollution control and cleanup, they can increase future profitability.

Integrating Environmental Impact Information into Management Decisions

Successful management of environmental impacts in Stage 2 depends on accumulating, aggregating, and measuring information on corporate environmental impacts, and reporting it to managers.

The data must fit into a system that gives management necessary costing information for improved analysis and for decisions about the design and evaluation of product and process improvements.

Exhibit 4 lists various organisational decisions that require better environmental impact information, and the type of information that is usually required. In most cases, the organisation needs several items of environmental information in order to make sound environmental decisions.

An environmental impact information system should feed information to the organisation's existing management accounting and financial reporting systems. This provides information that integrates environmental costs and benefits with decisions about financial reporting, financial analysis, capital investments, product costing, product pricing, product and process design, and performance evaluation.

Managers throughout the organisation can identify the environmental impact of products and processes and better understand how these impacts will likely affect other company operations. With a broader understanding of the impact of new

environmental regulations, some companies re-evaluate their accruals in financial statements and their disclosures in MD&A sections of annual reports. In most cases, this information also improves product costing, product design, capital budgeting, and performance evaluation decisions.

Is a link between the environmental impact information system and accounting/finance necessary? No. Is it desirable? In most cases, yes. By integrating the physical data and cost data or environmental impact into the management accounting and reporting systems, decision-makers gain more complete information with which to improve decisions. In too many organisations, EH&S personnel have expended substantial effort to gather useful environmental data that have not been passed along to operations, legal, accounting, and senior management. Linking these systems costs little and has significant organisational and decision-making benefits.

Stage 3: Completing Environmental Integration

When a firm progresses to Stage 3 of the implementation guidelines, its environmental strategy and goals become fully integrated throughout the organisation and into all management decisions. The goal is no longer to minimize or contain costs but to maximize the value of all resources, including waste. Even the term "waste" is redefined. There is no waste, only reusable by-products. The results of this integration: not only does the company minimize both company costs and environmental costs, but it also gains products and by-products that increase corporate revenue and therefore profitability.

Exhibit 4 - Integrating Environmental Information into Management Decisions

Environmental Information Required	Decisions
• Physical data related to the reduction of toxicity and waste	• Capital investments for environmental projects • Capital investments for non-environmental projects
• Accumulation of current environmental costs for past sins by activity, facility, and product	• Financial reporting • Process design
• Accumulation of current environmental costs for current sins by activity, facility, and product	• Purchasing • Cost control
• Present and future capital expenditures for pollution prevention	• Product design • Product packaging
• Present and future capital expenditures for pollution control	• Product costing • Product pricing
• Present and future costs for product redesign	• Resource recovery and waste management
• Present and future costs for process redesign	• Evaluation of performance of corporation, facilities, and products
• Estimates of future environmental costs	• Evaluation of performance of managers
• Estimates of future environmental benefits	• Risk assessments and risk management

Stage 3 companies see the risk-reduction benefit of preventing pollution in the first place, rather than cleaning up after it. For example, the first priority of 3M Corporation's "Pollution Prevention Pays" (3P) program is to "prevent pollution at the source." AT&T's strategy is to design "closed-loop" operations in which materials leave only as finished products or benign waste.

Stage 3 firms seek to perform tasks and services that are sustainably produced and/or promote sustainability in society as a whole. Management introduces sustainability as a key criterion for all business activities.

Actions of a Stage 3 environmental strategy often include:

- integrating environmental impact into performance evaluation systems;
- generating revenue through recycling and "waste" management;
- introducing and marketing "eco-efficient" products/ services; and
- integrating the principles of sustainable development.

Integrating Environmental Impact into Performance Evaluation Systems

For an organisation intent on changing its corporate culture and achieving environmental integration, performance measurement is critical. The environmental performance of

individuals, facilities, and divisions must be an integral part of the performance evaluation systems.

In Stage 3, organisations revise their performance evaluation systems to make salary, bonus, and promotion policies consistent with their stated corporate environmental goals.

Some companies intentionally opt for an implicit system to give managers the discretion to make trade-offs between environmental performance and financial performance. If a company views environmental performance as a core value and wants to change its corporate culture, an explicit performance evaluation system will likely produce more powerful results.

If developed properly, the system can affect the pay of employees, their supervisors, and senior managers through divisional performance evaluations that contain an environmental component in addition to the standard profit component. It can substantially reduce fines related to violations of environmental laws, increase efficiency through improved monitoring of process performance, and reduce the amount of work that the central environmental audit staff must perform. With this approach, suggested process improvements are more noticeable, waste is often reduced, and profits often increase.

Some companies explicitly identify the environmental goals for each business unit to encourage monitoring for continuous improvement. Alcan Aluminium, for example,

requires that compliance reviews be conducted every three years on every operating entity and location. It then requires the management of each business unit to provide an annual representation letter based on the compliance review and other business unit information that reports on "its current environmental status, identifies changing requirements, risks and hazards, and outlines environmental plans and financial requirements for that business unit." This representation letter is then submitted to the environmental committee of the board of directors and the CEO. It helps the company to better understand the corporate capital needs for environmental protection along with the necessary research and development and process improvements. With an approach like this, a company can encourage managers to focus on environmental status, risks, and plans, and then be held accountable for the results of that analysis and planning.

For those companies that indeed want to improve corporate environmental performance, the development of incentives is important. Many companies provide awards to employees for exemplary environmental performance. In some cases, teams are rewarded rather than individuals; rewards vary from cash gifts to other methods of acknowledging the achievement, such as banquets, plaques, etc. Chevron, for example, has a Recognition and Awards program that provides rewards for doing things right and acts as an incentive for employees to go beyond their job responsibility and to become eligible for a cash award of $500 to $5,000. These programs can be useful, but only in connection with a more comprehensive program of performance evaluation that

includes other programs to improve environmental performance.

Probably the most comprehensive system is that of Browning-Ferris Industries (BFI). Committed to viewing society's changing requirements for corporate environmental responsibility as a new business opportunity rather than regulations to battle, BFI introduced an environmental multiplier into its performance evaluation system. This explicit compound incentive plan is a powerful motivator because it multiplies an environmental compliance score by the score on profit and revenue goals. If a score of less than 70% is received on environmental compliance, the multiplier (and the resulting bonus) is zero.

In the long run, environmental performance and financial performance are interrelated. Organisations cannot continue to strive for environmental excellence while evaluating and rewarding performance strictly on short-term financial indicators.[11]

Generating Revenue through Waste Management and Recycling

Environmental and financial considerations often merge in the management of energy and waste. For this reason, waste management, including recycling, is one of the major areas in which Stage 3 firms take environmental initiatives.

Recovery and reuse of materials can be either in-plant or off-plant (recycling). In-plant recovery and reuse is one of

the simplest methods to curtail pollution generation. Through recovery and reuse of polluting materials, Stage 3 companies transform an expensive waste reduction activity into a profitable one. In this strategy, pollutants are recovered and reused repeatedly. This helps eliminate waste disposal costs, decrease material costs, and generate revenue from the saleable waste.

For example, in 1967, Xerox Corporation faced a potential health hazard associated with the disposal of its photoreceptor drums, which were made from aluminum with an arsenic alloy coating. Xerox decided to reclaim these drums. What began as a way to avoid a potential hazard became a profitable business. The drums were remanufactured at a fraction of the cost of a new one. The remanufacturing of parts has been expanded, and Xerox is currently reclaiming about 1 million pieces of equipment worth a total of $200 million (Bhushan and Mackenzie 1994).

In-plant recovery may not be possible because the company lacks equipment, because the firm generates too little waste, or because the waste cannot be used in the plant. In this case, Stage 3 firms initiate off-plant reuse and recovery. Recycling and reuse of cans, bottles, and papers are examples of off-plant recovery and reuse of wastes.

Outside of the manufacturing sector, service companies have also found numerous opportunities to generate revenue through waste management. McDonald's, for example, has incorporated waste management goals into its evaluation of

suppliers and encourages them to develop environmentally preferable products and packaging. These efforts are part of McDonald's three waste reduction principles: reduce, reuse, recycle. The company is taking a "total life-cycle" approach to solid waste. Like many other companies, McDonald's is holding its suppliers accountable by including environmental audits of supplier facilities, processes, and products before beginning or continuing relationships. The company's comprehensive "total life-cycle" approach has significantly reduced the volume of packaging used and the amount of waste produced. Furthermore, costs have been reduced so that both the environment and the company's profits benefit substantially.

Introducing and Marketing "Eco-Efficient" Products and Services

Today's consumer is much more environmentally aware than the typical consumer of two decades ago. Generally speaking, if consumers have a choice between a polluting and non-polluting product, they are most likely to choose the latter. Hence, any manufacturer whose product is related to pollution problems will likely lose market share. Non-polluting products are already in great demand in Europe; consumers in North America and elsewhere are beginning to follow.

For example, large numbers of North American consumers are already seeking assurance that the products they buy are the least ecologically damaging possible "recycled papers, low-energy-consumption appliances, and so on.

Stage 3 organisations seek to profit from this "greening" of consumer attitudes and behavior. Rather than concentrate on controlling the cost of pollution, they aim to increase their market share and long-term revenues through introducing products and services with an environmental orientation.

The range of "eco-efficient" product and service business opportunities spans virtually every industry sector. Several implementation approaches are possible, including:

- repositioning existing products and services as eco-efficient;
- developing a new eco-efficient product or service not previously offered;
- licensing a new eco-efficient product or service available outside the organisation's geographic sales area; and importing an
- eco-efficient product.

Some of the elements that make a product eco-efficient are (Simon 1992):

- reduced raw material, high recycled content (aluminium cans);
- non-polluting manufacture/non-toxic materials (CFCs, de-inking solvents, etc.);
- no unnecessary animal testing (cosmetics);
- no impact on protected species (dolphin/tuna);

- low energy consumption during production/use/ disposal;
- minimal or no packaging;
- reuse/refillability where possible (beverage containers, detergent bottles);
- long useful life, updating capacity (office machines);
- post-consumer collection/disassemble system (cars); or
- re-manufacture capability ("closed loop" or "partial loop")

Loblaws, Canada's largest supermarket chain, has worked with environmentalists to evaluate corporate practices along these lines. The company invited Pollution Probe, a Toronto-based environmental group, to conduct an environmental analysis, which identified "green" products that Loblaws could develop and sell. Criteria included reducing raw materials used in manufacturing, eliminating toxic components, and using recycled materials in products and packaging (Callenbach, et al 1993).

Stage 3 firms position their products/services as eco-efficient in a variety of ways, for example:

- **Public relations**. Communicating their environmental commitment such as Mutual of Omaha's sponsorship of "Wild Kingdom" ; and
- **Specific product attributes.** Communicating the positive aspects of their products through

government-sponsored product“ eco-labels” (see Exhibit 5). Such labels guide consumers toward the purchase of less environmentally damaging products.

Exhibit 5 - Product Eco-Labels[12]

“Japan’s Eco-Mark Program”

“Canada’s Environmental Choice Program”

Germany’s Blue Angel Program”

“India’s Environmental information system”

Source: Callenbach, et al 1993:88.

The Home Depot’s approach is a good example of eco-efficient marketing. The company has published and adopted a set of environmental principles that guide its managerial thinking. It supports and sells products that are manufactured, packaged, and labelled in an environmentally friendly manner. It has an extensive process for determining the accuracy and informative nature of product labelling for the goods it sells. Besides verifying supplier claims, the company tries to eliminate unnecessary packaging and encourage recycling.

Some issues that an organisation must address in

introducing and marketing “eco-efficient” products and services concepts are:

- **Strategic issues.** This involves such questions as: What competitive offerings are currently available? How will different eco-efficient product concepts position the company vis-à-vis its competition? How important is it to leverage existing brand recognition? What marketing strategies are appropriate?
- **Market data issues.** One of the barriers to entry into the eco-efficient market is consumers’ lack of clearly defined environmental preferences;
- **Competitive issues.** Persuading the market that their eco-efficient product is competitive in price and performance;
- **Inclusive science issues.** Eco-efficient marketing would be much simpler if there were scientific consensus on which substances are harmful, how they are harmful, and in what amounts they are harmful. For example, is paper or plastic environmentally superior?
- Consumer education issues. Because of the complexity of environmental issues and the controversy over what is truly eco-efficient, many consumers are confused or ignorant about environmental issues;

- Public skepticism issues. The legacy of "misleading" environmental marketing is substantial enough to create strong consumer skepticism about eco-efficient claims;
- Regulatory issues. Eco-efficiency claims have been the subject of increasing regulations. This means that different jurisdictions often have slightly different regulations;
- Pipeline issues. It is necessary to determine if the new eco-efficient product or products will be compatible with current or available production capabilities and with principles of sustainable development; and
- Claim substantiation issues. Consumers and regulators alike are demanding greater substantiation of environmental claims.

Stage 3 organisations provide a contextual background that allows consumers to make sense of environmental claims, much as food vendors provide nutrition information to improve consumers_ background understanding and make nutrition-based claims more effective.

For example, Procter & Gamble distributes a pamphlet by direct mail that outlines its efforts to reduce solid waste. By making the pamphlet informational and educational, Procter & Gamble prepares the market with sufficient information, making its future targeted eco-efficient marketing efforts more effective.

Advancing claims in a market that lacks the context in which to understand them carries a substantial risk. A claim that is technically true might add nothing to the marketing effort if consumers fail to understand it.

Marketing eco-efficiency requires commitment, research, strategic planning, and a coherent philosophy of environmental responsibility. While this marketing effort is a mixture of art and science, it should still haphazardly, it can become eco-efficient hype and backfire dramatically.

The following principles are critical to the success of an environmentally conscious marketing campaign:

- starting by being eco-efficient. Organisations develop an environmentally committed organisation that can honestly tell the public that it and its products are eco-efficient;
- documenting and measuring the processes;
- leveraging environmental commitment by communicating to the public;
- understanding the market - where the product is sold, who buys it, and the buyer's "level of environmental understanding";
- educating the market so that buyers understand and appreciate eco-efficient claims; and
- being honest and factual.

Integrating the Principles of Sustainable Development Sustainable development requires progress that meets the needs of the present without compromising the ability of future generations to meet their own needs.

An increasing number of corporations are convinced that no long-term economic growth is possible unless that growth is environmentally sustainable. These corporations recognize that they require a balance between economics and environmental sensitivity. Further, they recognize that they can achieve competitive advantages through a conscientious examination of processes and products. They also understand that reducing environmental impacts often increases long-term corporate profitability through higher production yields and improved product quality.

Sustainable business development requires corporations to operate in a different framework. For example, the International Chamber of Commerce's Business Charter for Sustainable Development launched in 1991 has become an umbrella code of environmental conduct backed by companies worldwide. Translated into 23 languages, it is now supported by more than 1,200 major companies and industry associations.

The Charter sets out clear principles affecting all aspects of company operations, from investment planning to staff training, from customer advice to research, from product development to marketing, and from technology transfer to relations with suppliers (see Appendix D).

Sustainable development is the focus of E.B. Eddy Group's EH&S report. According to the company's mission statement:

Sustainable development is not a question of choice between growth and the environment. It is the establishment of a decision-making process which integrates the efficient conversion of resources with concern for long-term environmental consequences. This excellence is more than product quality. It also refers to quality of process, and, most importantly, quality of people. The combination of quality process, people, and products will make sustainable development a reality and will be a market for opportunity for the company.

In North America and around the world, sustainable development is still a long way off. But leading organisations are spreading the word that good environmental citizenship can improve a company's bottom line, not weaken it.

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ORGANISATIONAL AND MANAGEMENT ACCOUNTING CHALLENGES

Organisations must recognize that environmental issues will pervade all functions. For example, procurement will need to find raw materials that come from sustainable sources of supply and that are produced with lower environmental impact. It must find ways to reduce packaging and use more recycled materials.

Research and development will need to identify processes that use resources more efficiently by finding new uses for waste products. Marketing needs to learn about the growing consumer preference for environmentally friendly goods and about how marketing, distribution, and selling methods can reduce environmental impact. Production will need to work with engineers and maintenance people to devise processes that are more efficient and less costly in energy and resource use. Legal staff need to find good ways to keep abreast of legislation and learn how best to disseminate this information.

Management accounting will need to improve the quality and quantity of information it provides managers so that they can make better decisions on product costing, and pricing, product and process design, and capital investments. Financial reporting and auditing will need to improve the quality and quantity of external disclosures related to environmental liabilities so that external users of the information can better evaluate the company's current and future prospects.

None of this potential activity will happen without vision, strategic direction, and example from the top of the organisation. In order to achieve coherence and integration, the environmental action plan must outline priorities, time scales, and allocation of appropriate resources.

The other key challenge facing organisations is to stop seeing environmental issues only in an operational context. Instead, they must raise their programs to a strategic level so that effective environmental management creates a competitive advantage.

Senior management and management accountants need to work proactively with government regulators in developing cost-benefit analyses of proposed regulations, in providing cost impacts for implementing new regulations, and in helping to evaluate alternative courses of action.

The key challenge for management accountants is to change their focus. They should no longer concentrate on determining the minimum amount of environmental liability that the firm must accrue. Management accountants must focus on the likely impact of existing production and practices on both the environment and the organisation. They will also need to consider the likely impact of regulations, technology, and competition on the organisation.

To meet these growing corporate needs, they will need to master new analysis methods and measurements related to resource usage, pollution, and waste.

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CONCLUSION

Only recently have organisations begun to consider the interplay of corporate strategy and environmental responsibility. Corporate strategy will inevitably be affected by the complex environmental agenda emerging internationally and within national and regional markets.

Organisations that set out to develop a sustainable business will gain in stature and enhance their reputation and business results in a daunting and challenging world.

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APPENDIX A: ENVIRONMENTAL POLICY STATEMENTS

Environmental Legislation in India

Industry and business are increasingly concerned about achieving and demonstrating sound environment performance, because of compulsions from stringent legislation.

The Ministry of Environment and Forests is the nodal agency at the Central level for planning, promoting and coordinating the environmental programmes, apart from policy formulation. A number of enforcement agencies assist the Ministry of Environment and Forests, in executing the assigned responsibilities.

The industrial pollution prevention and control, are primarily executed by Pollution Control Board at the central level, which is a statutory authority attached to the Ministry of Environment and Forests. At the State level, the State Departments of Environment and State Pollution Control Boards are the designated agencies to perform these functions.

Environmental Management Systems (EMS)

As defined in ISO 14001, an Environmental Management System (EMS) is a part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental systems.

Essentially, an EMS is a structured, organisation - wide approach that enables a company of any size or type to address the environmental impacts of its activities, products and services. An EMS makes possible controlling environmental impacts and setting initiatives to improve environmental performance.

ISO 14000 is a series of voluntary generic standards developed / being developed by ISO that provides business management with the structure for managing environmental impacts. The standards include a broad range of environmental management disciplines, including the basic management system, auditing, performance evaluation, labelling and life cycle assessment.

Classified according to their focus, the standards fall into two categories.

1. Organisation or process standards - environmental management system (EMS), environmental auditing EA) and environmental performance evaluation and

2. Product-oriented standards - life cycle assessment, environmental labelling and environmental aspects in product standards.

Environmental Issues Related to Industry

The environmental issues related to industry are the use of resources and the contamination of air, water & land.

Air Pollution

Air becomes polluted when the relative quantities of the components deviate from the delicate balance and exceed

the base level. Gaseous air pollutants include carbon dioxide, carbon monoxide, hydrogen sulfide, hydrocarbons, nitrogen oxides, ozone and sulfur oxides.

Particulate air pollutants include smoke, dusts, fumes and mists. Particulate pollutants can be organic (substance containing carbon) or inorganic (not containing carbon). The size of the particulate varies from <0.01 to >100 micrometers in diameter.

Water Pollution

Water is a universal solvent and is used as a vital medium for transporting waste. The wide spread use of water as a mode of transporting waste has lead to water pollution problem.

Land Pollution

Land is a final resting place for the majority of our garbage and waste. Land is susceptible to pollution especially the surface soil layer. Contamination of soil (spills, waste sites etc.) leads to the destruction of the accelerated erosion, polluted land and possible leaching of toxic substances to rivers or lakes.

Source : http://greenbusinesscentre.com/msg.asp

Reliance Industries

Report on Corporate Social Responsibility

Health, Safety and Environment

Health, Safety and Environment (HSE) is a high priority issue at Reliance. The aim is to provide comprehensive health

services covering preventive, promotive, curative and community health care services.

Further, the management's vision to put safety of personnel above all, is evident from the policy statement, "Safety of persons overrides all production targets". This vision drives the company to continuously look for ways to break new barriers in safety management for the benefit of all.

To establish a direction towards attaining world-class environmental management, the Company has identified key performance indicators such as material consumption, energy efficiency, GHG emission, air quality, ozone depleting substances, water consumption, waste water discharge, hazardous and non-hazardous waste generation and disposal.

Health

Reliance's state-of-the-art Occupational Health Centres (OHC) at its manufacturing divisions offer health care services to its employees. These centres are equipped with diagnostic and therapeutic equipment and are manned by qualified occupational health specialists. The programmes conducted by medical centres, include preventive health care through pre-employment and also periodic medical examinations of all employees. The results are computerized and analysed so as to provide targeted interventions at the individual and group levels. The medical departments also carry out informative lecture sessions, exhibitions and diagnostic camps. Curative treatments are a part and parcel of the services provided. The

employees are also supported for hospitalization by regular liaisoning and provision of financial support, where required.

CASHe Reliance's preventive health care, provided through workplace improvements is carried out under the CASHe Programme. Started in 2003, it has grown to encompass the entire enterprise. The programme has been instrumental in creating a culture of implementing health, safety and environment projects on a priority basis. This programme has also helped the Company to improve its performance on the occupational health and safety front, besides being recognized in international forums, like the International Commission on Occupational Health Congress, held in Italy. Occupational Health Centres (OHC) The Company's occupational health centers are also in the forefront in organizing preventive educational programmes for noncommunicable diseases, such as: heart problems, hypertension, diabetes and other lifestyle diseases, along with informative sessions for communicable diseases, such as: malaria, tuberculosis and HIV / AIDS. The Company endeavours to move towards the concept of wellness as it recognizes that a healthy worker is a productive worker.

Safety

Having reached high levels of safety management within the country, the management has, in the last few years, been steadily taking strategic steps to take the Company to world class levels. This year, under the guidance of the HSE Committee of Directors, Reliance entered into a strategic

partnership with DuPont Safety Resources. The engagement is focused on behavioral as well as process safety aspects and aims at bringing in excellence in safety management. In addition to personnel safety, process safety is also a top priority for the Company. World class documented standards, emphasis on line management responsibility, an improved and standardized process for safety observations are helping the manufacturing sites achieve higher employee participation in the safety management process. In line with the Company's vision to always tie-up with the best in the world, Reliance has tied-up with the Centre for Chemical Process Safety, of the American Institute of Chemicals Engineers (AIChE) of USA. The focus on construction safety has further increased with standardized safety management practices being established at all construction areas from Jamnagar to Kakinada. Construction of office buildings is also being monitored strongly from a safety point of view. This emphasis has led to the Company achieving a low lost time incident rate even at construction projects. With business needs increasing, the Company is also focusing on transportation and distribution safety. This focus shall not only help establish international systems for the existing businesses, but also prepare for the upcoming businesses such as Retail. The Centre for HSE Excellence is accordingly getting further strengthened with the necessary skill sets and competencies. The Centre is helping Reliance to implement and practice world class standards as well as standardize the processes and establish the "Reliance Way" of Safety Management.

Environment

In its pursuit of excellence in sustainable development, Reliance further integrated its safety and environment performance in the overall business plan and strategy. A management system approach, consisting of gap analysis, planning, implementation, and review has percolated to all business plans through ISO 14001:2004 at all manufacturing locations. Through its annual environment plan and business targets, the Company identifies projects and takes action to achieve these targets with the ultimate goal of becoming water positive, carbon neutral, with maximum possible recycling and reuse of hazardous and other wastes. A management framework with defined structures, roles and responsibilities, group guidelines, audits and training has been instituted to implement the journey towards world-class excellence in environment. The Company initiated reporting environmental efforts to the world through Global Reporting Initiative following G-3: 2006 guidelines. Reliance's second Sustainability Report for FY 2005-06, "My Reliance. My Life" received the highest possible accreditation: GRI Checked A+. The Company has also undertaken an exercise to establish world class corporate environmental standards with the help of DuPont experts. Reliance is statutory compliant in the area of environment. As a policy, environment impact assessment and qualitative risk analysis are performed for all new and major expansion projects and incorporate all necessary measures to mitigate environmental impacts due to project implementation. All the hardware - such as effluent treatment plants, air emission abatement units and waste disposal facilities, were maintained

and improved further. The above RELIANCE INDUSTRIES LIMITED 37 efforts have resulted in a significant improvement in water consumption, water recycle and reuse, CO2 and other air emissions, ozone depleting substances consumption and hazardous waste generation. This year, Reliance's exploration and production (E&P) division, involved in exploratory drilling in various off-shore blocks off the coast of State of Andhra Pradesh, has moved into development phase for the KG-D6 project. Regulatory environment monitoring programs have been instituted from the beginning of construction phase to ensure a fool-proof compliance tracking and reporting mechanism.

Climate change and Energy conservation: During 2007- 08,

Reliance registered two Clean Development Mechanism (CDM) projects, one each from Patalganga and Allahabad, with UNFCCC for CO2 reduction. More than 100,000 Certified Emission Reduction (CER) from two of the registered projects have been verified and issued by United Nations Framework Convention on Climate Change (UNFCCC). The Company is exploring all possibilities to take the benefit of CDM credits through various projects. Reliance also became member of Carbon Capture and Sequestration Association, London, for active participation in worldwide activities related to Carbon Capture and Storage (CCS). To decrease the Company's carbon footprint, activities have been initiated in the area of bio-diesel through non-edible route of Jatropha seeds. Extensive distribution of Jatropha saplings and cultivation in

the wasteland has been targeted and a pilot plant of 20 Ton Per day (TPD) bio-diesels is ready for commissioning. Reliance is also exploring the possibility of bio-ethanol using second generation raw material. Fresh water consumption and effluent discharge: Reliance as a responsible corporate has accorded top priority to water conservation and reuse to preserve fresh water, one of the precious natural resources. Jamnagar Manufacturing Division is not dependent on fresh water resource and continues to generate fresh water from sea. A study was undertaken by internationally renowned consultant M/S ENSR, USA to improve the effluent treatment plant's (ETP) operation at Jamnagar Manufacturing Division. Their recommendations are being implemented. New facilities have been created for township and labour camps at the Jamnagar Manufacturing Division and also at the Nagpur Manufacturing Division for the treatment of domestic sewage and its reuse and recycle. Compared to the previous year, there has been a reduction in consumption of water at manufacturing locations Jamnagar, Kurkumbh, Hoshiarpur, Silvassa, Dhenkanal and Nagpur manufacturing divisions have achieved 100 % recycling of the treated water and thus attained the status of "Zero discharge" sites. Vadodara and Hazira Manufacturing Divisions have initiated the "Zero Discharge Project". Waste reduction and utilization: Reliance's Manufacturing Divisions at Vadodara and Hazira have achieved significant reduction in hazardous waste generation through process improvement, recycling and reuse efforts, employing Six Sigma methodology. Efforts on plastic waste recycling, through Indian Center for Plastics in the Environment

(ICPE), and PET bottle waste recycling, have been very well documented, and continue to reduce load on municipal waste. These efforts also generate employment for the weaker sections of society. A project on conversion of biological sludge to manure by vermi-compost has been initiated at Vadodara, Hazira and Naroda Manufacturing Divisions. Canteen waste at Manufacturing Divisions located at Jamnagar, Hazira and Nagothane is converted to bio-gas and used as fuel. At Nagothane Manufacturing Division, conversion of horticulture bio-mass to coal briquettes and its use as fuel has been implemented. The Company has taken a proactive measure for the safe disposal of electronic waste, fluorescent tube lights, empty paint containers, spray cans, etc. Silvassa Manufacturing Division has established EWaste disposal through E-Parisara, MoEF approved recycling agency, while the Manufacturing Divisions at Jamnagar and Hazira have instituted tube light and empty paint container crusher with recovery and safe disposal of toxics. These practices are being implemented at others sites as well. Training and Audits: During the year, Reliance has accorded highest priority to the training, awareness and learning mechanism at all levels. During the year, various internal and advanced training programs and inter-site meets were conducted involving experts. Learning on specific environmental issues through participation in national and international conferences, workshop and courses, has been encouraged at Reliance. Effective networking and collaboration with national and international agencies such as universities, research institutes, regulatory bodies, industrial and professional association has

helped to assimilate and implement the world class best practices in HSE management. Environment audit is one of the important tools on which special emphasis is given and the Company currently has more than 75 “Trained Lead Auditors” for ISO 14001:2004. Various audits conducted during the year include third party statutory audits in the state of Gujarat and ISO audits; group environment audit; independent assurance of Reliance’s Sustainability Reports by Ernst & Young; Audit by Japanese Union of Scientists & Engineers at Hazira and Nexant team at Jamnagar. Action plans are made to liquidate all audit observations. Community Environment Initiatives: Various environment programs, such as tree plantation, water conservation & harvesting and energy saving initiatives were conducted by all sites within the complex and in the nearby community. All sites, as part of the ‘World Environment Day’ celebrations created awareness on Global Warming and melting of ice. This year, manufacturing Divisions at Vadodara and Dahej gave special emphasis to schools and initiated Green School project using the framework developed by Centre for Science and Environment (CSE), New Delhi. To enhance bio-diversity in the vicinity of the on-shore facility at Kakinada, Reliance undertook an extensive mangrove plantation exercise and also forestation for restoration of degraded mangrove areas in Coringa mangrove forest in association with MS Swaminathan Foundation. Reliance has also sponsored study of coastal wetlands of Godavari Delta to Environment Centre- a reputed NGO of Andhra Pradesh.

Source : Reliance Annual Report 2007-2008

TATA MOTORS

Green Matters:

Tata Motors, a Company that cares about the future...

True to the tradition of the Tata Group, Tata Motors is committed in letter and spirit to Corporate Social Responsibility. It is a signatory to the United Nations Global Compact, and is engaged in community and social initiatives on labour and environment standards in compliance with the principles of the Global Compact. In accordance with this, it plays an active role in community development, serving rural communities around its manufacturing locations.

Tata Motors believes in technology for tomorrow. Our products stand testimony to this.Our annual expenditure on R&D is approximately 2% of our turnover. We have also set up two in-house Engineering Research Centres that house India's only Certified Crash Test Facility. We ensure that our products are environmentally sound in a variety of ways. These include reducing hazardous materials in vehicle components, developing extended life lubricants, fluids and using ozone-friendly refrigerants. Tata Motors has been making conscious effort in the implementation of several environmentally sensitive technologies in manufacturing processes. The Company uses some of the world's most advanced equipment for emission check and control.

Tata Motors concern is manifested by a dual approach –

1. Reduction of environmental pollution and regular pollution control drives

2. Restoration of ecological balance.

Our endeavors towards environment protection are soil and water conservation programmes and extensive tree plantation drives. Tata Motors is committed to restoring and preserving environmental balance, by reducing waste and pollutants, conserving resources and recycling materials.

Reducing Pollution:

Tata Motors has been at the forefront of the Indian automobile industry's anti-pollution efforts by introducing cleaner engines. It is the first Indian Company to introduce vehicles with Euro norms well ahead of the mandated dates. Tata Motors' joint venture with Cummins Engine Company, USA, in 1992, was a pioneering effort to introduce emission control technology for India. Over the years, Tata Motors has also made investments in setting up of an advanced emission-testing laboratory.

With the intention of protecting the environment, Tata Motors has upgraded the performance of its entire range of four and six cylinder engines to meet international emission standards. This has been accomplished with the help of world-renowned engine consultants like Ricardo and AVL. These engines are used in Tata Motors vehicles in the Indian market, as well as in over 70 export markets.

Tata Motors is constantly working towards developing alternative fuel engine technologies. It has manufactured CNG version of buses and followed it up with a CNG version of its passenger car, the Indica.

Restoring Ecological Balance:

Tata Motors has set up effluent treatment facilities in its plants, to avoid release of polluted water into the ecosystem. In Pune, the treated water is conserved in lakes attracting various species of birds from around the world thus turning the space into a green belt.

Tree plantation programmes involving villagers and Tata Motors employees, have turned acres of barren village green. Tata Motors has planted as many as 80,000 trees in the works and the township and more than 2.4 million trees have been planted in Jamshedpur region. Over half a million trees have been planted in the Poona region. Tata Motors has directed all its suppliers to package their products in alternate material instead of wood.

End of Life Vehicle Treatment and Recycling: India is a recycling society with many people making value out the recovery of waste materials discarded from products at the end of their useful life.

However, Europe, and some other export markets, have recognised that they have become a 'throwaway' society in recent decades, and are now introducing waste prevention regimes in different industry sectors to collect and recycle valuable resource rather than it ending up in landfill.

In the Automotive sector, the European End of Life Vehicle (ELV) Directive, points responsibility for this issue to vehicle manufacturers, and the scrap car recovery industry. Similar regulations are being introduced in Japan and Korea.

Naturally, Tata Motors has already met the 'producer responsibility' aspects of the ELV Directive, such as compliance to Heavy metals and other hazardous substance restrictions. Also, material code marking of plastic parts has been introduced to aid achievement of demanding European recycling targets.

Central to this European regulation is for manufacturers to provide free take-back networks for environmentally sound treatment of ELVs. Last owner contacts for access to Tata Motors subscribed take-back schemes can be found in: www.tatamotors.com/takeback.php

Only specially authorized vehicle dismantler and shredder operators are allowed to treat ELVs in Europe, and they have access to Tata Motors ELV treatment information by registering on:

Source : www.tatamotors.com/dismantlers.php

ITC Limited

SOCIO-ECONOMIC ENVIRONMENT

India sustained its pre-eminent position as one of the fastest growing economies in the world in 2007/08. Despite the relative deceleration in several sectors, real GDP notched an impressive growth of 9%, as per revised estimates of the Central Statistical Organisation. India joined the ranks of the trillion dollar economies in the world, giving us yet another moment of national pride.

Source: ITC Ltd Annual report

APPENDIX B: INTERNATIONALENVIRONMENTAL POLICY STATEMENTS

DOW CHEMICAL CANADA INC.

(In Environmental Progress Report 1993)

Environmental, Health and Safety Policy

At Dow, protecting people and the environment will be a part of everything we do and every decision we make. Each employee has a responsibility in ensuring that our products and operations meet applicable government or Dow standards, whichever is more stringent.

Our goal is to eliminate all injuries, prevent adverse environmental and health impacts, reduce wastes and emissions, and promote resource conservation at every stage of the life cycle of our products. We will report our progress and be responsive to the public.

LAIDLAW INC.

(After Report to Shareholders)

Environmental Initiatives

We first published our environmental policy in our 1991 Annual Report. In summary, the policy commits the Company to behave in an environmentally responsible manner in the interests of our employees, customers, and the communities in which we are located. It requires us to work closely with regulators and associations to develop and comply with sound

environmental policies and to maintain a standard that surpasses our legal responsibilities. It requires recycling, reuse, and recovery of resources wherever practical and that we carry out environmental audits of our facilities and respond promptly to any deficiencies we may find. Our Board of Directors and executive will ensure these principles are respected.

Source:The Canadian Institute of Chartered Accountants 1994.

EASTMAN KODAK's GUIDING PRINCIPLES

Health, Safety, and Environment Guiding Principles

Guiding Principles

1. To extend knowledge by conducting or supporting research on the health, safety, and environmental effects of our products, processes, and waste materials.

2. To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public, and is efficient in the use of natural resources and energy.

3. To make health, safety, and environmental considerations a priority in our planning for all existing and new products and processes.

4. To develop, produce, and market products and materials that can be manufactured, transported,

used, and disposed of safely and in a way that poses no undue environmental impact.

5. To counsel customers on the safe use, transportation, storage, and disposal of our products and, for those services we provide, to provide them safely.

6. To participate with governments and others in creating responsible laws, regulations, and standards to safeguard the community, workplace, and environment and in applying environmentally sound management practices and technologies.

7. To measure our environmental performance on a regular basis and provide - to officials, employees, customers, shareowners, and the public appropriate and timely information on health, safety, or environmental hazards, initiatives, and recommended protective and preventive measures.

8. To recognize and respond to community concerns about our operations and to work with others to resolve problems created by handling and disposal of hazardous substances.

9. To encourage employees to apply off the job the same principles for health, safety, and the environment that are applied at work.

Source:Epstein 1995.

APPENDIX C: A CHECKLIST FOR ENVIRONMENTAL ACTION PROGRAMS

Internal Targets

Does the program:

- effectively use the firm's financial, human, and physical resources?
- link to the organisation's broad strategic plan?
- reflect personal values of the organisation's senior managers and employees?
- relate directly to market expectations and the organisation's internal capabilities?
- provide sufficient flexibility?
- take advantage of the organisation's planning, managerial, and developmental capabilities?
- emphasize the company's internal strengths and improve its weaknesses?
- reflect the company's financial resources?
- provide appropriate and achievable targets, a milestone program of attainable successes, as well as some more stretching targets?

External Targets

Does the program:

- further the company's compliance with environmental standards?
- advance the company's reputation with its customer base for good environmental practice and environmentally friendly products?
- assist the organisation in confirming or taking market niches?
- improve competitive conditions for current or planned product lines?
- help the organisation to use or take advantage of existing market and product strengths?
- assist the enterprise in entering new product areas that improve its ability to establish good environmental performance?

Source:Ledgerwood,Street,and Therivel 1994:46.

APPENDIX D: THE INTERNATIONAL CHAMBER OF COMMERCE'S BUSINESS CHARTER FOR SUSTAINABLE DEVELOPMENT

In April 1991, 700 industrialists met at the Second World Industry Conference on Environmental Management. They adopted a set of 16 principles (see below) as guidelines for creating sustainable corporations. Since then, top managements of several hundred companies, government organisations, and industry associations have endorsed these principles.

1. *Corporate priority:* To recognize environmental management as among the highest corporate priorities and as a key determinant to sustainable development; to establish policies, programs, and practices for conducting operations in an environmentally sustainable manner.

2. *Integrated management:* To integrate these policies, programs, and practices fully into each business as an essential element of management in all its functions.

3. *Process of improvement:* To continue to improve corporate policies, programs, and environmental performance, taking into account technological developments, scientific understanding, consumer needs, and community expectations, with legal regulations as a starting point; and to apply the same environmental criteria internationally.

4. *Employee education:* To educate, train, and motivate employees to conduct their activities in an environmentally responsible manner.

5. *Prior assessment:* To assess environmental impacts before starting a new activity or project and before decommissioning a facility or leaving a site.

6. *Products and services:* To develop and provide products or services that have no undue environmental impacts and are safe in their intended use, that are efficient in their consumption of energy and natural resources, and that can be recycled, reused, or disposed of safely.

7. *Customer advice:* To advise and, where relevant, educate customers, distributors, and the public in the safe use, transportation, storage, and disposal of products provided; and to apply similar considerations to the provision of services.

8. *Facilities and operations:* To develop, design, and operate facilities and conduct activities taking into consideration the efficient use of energy and materials, the sustainable use of renewable resources, the minimization of adverse environmental impact and waste generation, and the safe and responsible disposal of residual waste.

9. *Research:* To conduct or support research on the environmental impacts of raw materials, products, processes, emissions, and wastes associated with

the enterprise and on the means of minimizing such adverse impacts.

10. *Precautionary approach:* To modify the manufacture, marketing, or use of products or services or the conduct of activities, consistent with scientific and technical understanding, to prevent serious irreversible environmental degradation.

11. *Contractors and suppliers:* To promote the adoption of these principles by contractors acting on behalf of the enterprise, encouraging and where appropriate requiring improvements in their practices to make them consistent with those of the enterprise; and to encourage wider adoption of these principles by suppliers.

12. *Emergency preparedness:* To develop and maintain, where significant hazards exist, emergency preparedness plans in conjunction with the emergency services, relevant authorities, and the local community, recognizing potential boundary impacts.

13. *Transfer of technology:* To contribute to the transfer of environmentally sound technology and management methods throughout the industrial and public sectors.

14. *Contributing to the common effort:* To contribute to the development of public policy and to business, government, and inter-governmental programs and

educational initiatives that will enhance environmental awareness and protection.

15. *Openness to concerns:* To foster openness and dialogue with employees and the public, anticipating and responding to their concerns about the potential hazards and impacts of operations, products, wastes, or services, including those of trans-boundary or global significance.

16. *Compliance and reporting:* To measure environmental performance; to conduct regular environmental audits and assessments of compliance with company requirements, legal requirements, and these principles; and periodically to provide appropriate information to the board of directors, shareholders, employees, the authorities, and the public.

Source:Shrivastava 1996.

Confederation of Indian Industry's mission on "Sustainable Growth"

1. The Need

In its pursuit of achieving a developed country status by the year 2020, India needs to maintain the present high GDP growth rates.

This necessitates increased usage of natural resources, such as, energy & water. The increased resource usage compounds the problem of emissions.

There is a need for the country to achieve the higher growth rate with optimal use of resources and better emission standards.

Against this background, there is a need for India to focus on sustainable growth. Towards realizing this objective, CII has outlined a new "Mission for Sustainable Growth".

2. Core Purpose

The core purpose of the mission is "To promote and champion sustainable growth in Indian Industry", without compromising on high and accelerated growth.

3. Suggested Terms of Reference

The suggested terms of reference for the mission for sustainable growth are as follows:

a) To promote the concept of sustainable growth in Indian industry

b) To catalyse & facilitate development of policy on sustainable growth

c) Initiate sectoral activities through partnerships to achieve sustainable growth

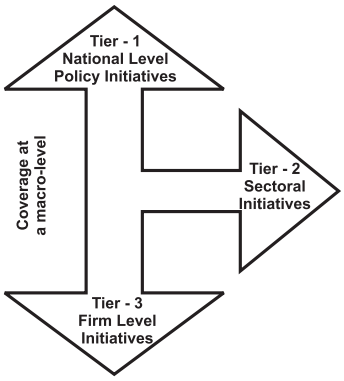
d) To facilitate & promote services, techniques and technologies to achieve sustainable growth objectives

e) To enrol 100 leader companies committed to sustainable growth objectives

f) Facilitate & demonstrate benefits of sustainable growth

4. Scope of the Mission

At a macro-level, the scope of the mission will target 3-tiers - national level, sectoral level and firm level.



Tier - 1 Activities

The tier-1 activities of the mission would focus on triggering policy initiatives at the national level. The idea is to catalyze and facilitate development of a policy on sustainable growth.

The policy will provide a clear definition for sustainable growth. It will also highlight the strategies & approach for conservation of natural resources, such as, energy, water etc., with goals & targets.

Tier - 2 Activities

The tier-2 activities would focus on industrial sectoral initiatives. The scope includes identifying top 10 industrial sectors, having maximum impact on sustainable growth.

To give a further fillip to the activities, CII will sign MoU's on partnership with respective industrial sectoral associations. CII along with the industrial sectoral associations will jointly initiate the following activities:

" Setting up norms, targets and goals for each sector

" Initiating voluntary target setting for each sector

¢ Eg: Emissions/ sec to come down by X% in 5 years

" Identifying what can trigger quick change

¢ Technologies, Process etc.

Tier - 3 Activities

The tier - 3 activities are focused on firm or unit level. The scope would include identifying specific activities which will improve bottom-line of the individual units.

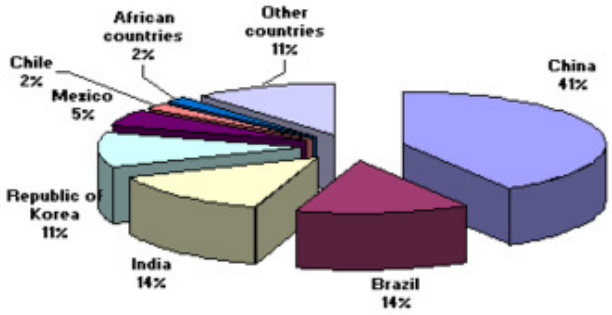
The entire process is aimed at facilitating achievement of the respective industrial sectoral goals and national goals.

The existing resources available within CII, viz., GBC, CESD, CFC and TQM would be leveraged for initiating these activities.

Source : http://greenbusinesscentre.com/msg.asp

APPENDIX E: CLEAN DEVELOPMENT MECHANISM

The **Clean Development Mechanism** (**CDM**) is an arrangement under the Kyoto Protocol(2005) allowing industrialised countries (Annex 1) to invest in projects in developing countries that reduce emissions and get credits called Carbon Credit. This is similar to costs paid for a deemed local compliance for benefiting the objective globally elsewhere . A picture of the emissions reduction achieved through this mechanism is given in the diagram below:



The CDM allows net global greenhouse gas emissions to be reduced at a much lower global cost by financing emissions reduction projects in developing countries where costs are lower than in industrialized countries The CDM is supervised by the CDM Executive Board (CDM EB) and is under the guidance of the Conference of the Parties (COP/MOP) of the United Nations Framework Convention on Climate Change (UNFCCC).

History and Purpose

The CDM was an important feature of the negotiations leading up to the Kyoto Protocol. Some governments desired

flexibility in the way that emission reductions could be achieved and proposed **international emissions trading** as a way of achieving cost-effective emission reductions..

The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from clean development mechanism (CDM) project activities and receive funds from other sources.

CDM project process

Outline of the project process

An industrialised country that wishes to get credits from a CDM project must obtain the consent of the developing country hosting the project that it will contribute to sustainable development. Then, using methodologies approved by the CDM Executive Board (EB), the applicant (the industrialised country) must make the case that the carbon project would not have happened in any case otherwise (establishing additionality), and must establish a **baseline** estimating the future emissions in absence of the registered project. The case is then validated by a third party agency, called a Designated Operational Entity (DOE), to ensure the project results in real, measurable, and long-term emission reductions. If a project is registered and implemented, the EB issues credits, called **Certified Emission Reductions (CERs,** commonly known as **carbon credits**, where each unit is equivalent to the reduction of one metric tonne of CO_2e, e.g. CO_2 or its

equivalent), to project participants based on the monitored difference between the baseline and the actual emissions, verified by the DOE.

Establishing additionality

To avoid giving credits to projects that would have happened even otherwise ("freeriders"), rules have been specified to ensure additionality of the project, that is, to ensure the project reduces emissions more than would have occurred in the absence of the project. There are currently two rival interpretations of the additionality criterion:

1. What is often called 'environmental additionality 'is that a project is additional if the emissions from the project are lower than the **baseline.** It generally looks at what would have happened without the project.

2. In the other interpretation, sometimes termed 'project additionality', the project might not have happened without the CDM., Official guidelines have been designed to facilitate uniform assessment set by the CDM Executive Board for assessing additionality.

Establishing a baseline

The amount of emission reduction, depends on the emissions that would have occurred without the project minus the emissions of the project. The construction of such a hypothetical scenario is known as the **baseline** of the project. The baseline may be estimated through reference to emissions from similar activities and technologies in the same

country or other countries, or to actual emissions prior to project implementation. Independent third party verification is meant to ameliorate this potential problem.

Financial issues

With costs of emission reduction typically much lower in developing countries than in industrialised countries, industrialised countries can comply with their emission reduction targets at much lower cost by receiving credits for emissions reduced in developing countries). While there would always be some cheap domestic emission reductions available in Europe, the cost of switching from coal to gas could be in the order of •40-50 per tonne CO_2 equivalent. CERs from CDM projects were in 2006 traded on a forward basis for between •5 and • 20 per tonne CO_2 equivalent..

Concerns

Exclusion of forest conservation/avoided deforestation from the CDM

The first commitment period of the Kyoto Protocol excluded forest conservation/avoided deforestation from the CDM There have been growing calls for the inclusion of forests in CDM schemes for the second commitment period.

The risk of false credits

It was recognized from the beginning that if projects that would have happened even otherwise are registered as CDM projects, then the net effect is an increase of global emissions

as those “spurious” credits will be used to allow higher domestic emissions without reducing emissions in the developing country hosting the CDM project. Spurious credits may also occur because of overstated baselines. Such a rejection is termed a “false positive”.

On the other hand, if a project is rejected because the criteria are set too high, there will be missed opportunities for emission reductions. Such a rejection is termed a “false negative”. For example, if it costs $75 to remove just one tonne from a domestic power station in a developed country, while the same money would reduce 37.5 tonnes of emissions through a genuinely additional CDM project in China, it is important that the validation process does not become so bureaucratic or onerous as to dissuade the more effective option.

Negotiators have not yet been able to agree on whether, or how, carbon capture and storage projects should be allowed under the CDM

Excessive payments for emission reductions.

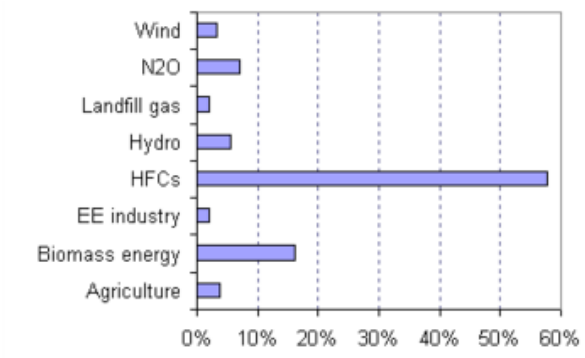
A study published in Nature found that a major class of CDM project paid as much as 50 times more for the emission reductions than the costs alone would warrant, with the excessive profits ending up with the factories and the carbon traders.

CASE HISTORY OF HFC –

The particular kind of CDM projects in question regard

refrigerant-producing factories in non-Annex-1 countries (particularly China) that generate the powerful greenhouse gas HFC 23 as a by-product. By destroying the HFCs, the factories can earn CER credits. Destroying the HFCs requires a simple and relatively cheap piece of equipment called a scrubber; it would cost only •100 million to pay producers to capture and destroy HFC 23 compared with •4.6 billion in CDM credits. While this is still cheaper than the typical cost of reducing emissions in industrialised countries, it is seen as a major loophole in the carbon trading system. New HFC 23 facilities will no longer be eligible for CDM credits.

CDM projects to date



As of 2 November 2007, 828 projects have been registered by the CDM Executive Board These projects reduce greenhouse gas emissions by an estimated 171 million ton CO_2 equivalent per year. There are about 2,600 projects in the pipeline (most of which not yet registered) would until the end of 2012 produce over 2.5 billion tons CO_2 equivalent reductions.

For comparison: The current emissions of the EU-15 are about 4.2 billion ton CO_2 equivalent per year[19]. Of the registered projects in the current pipeline, the majority of CERs have been from HFC destruction projects (see figure), a loophole in the CDM as discussed above.

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Annex I countries

Annex I countries (industrialized countries): Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States of America

Annex II countries

Annex II countries (developed countries which pay for costs of developing countries) : Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States of America.

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