

SYSTEMS APPROACH TO CORPORATE SUSTAINABILITY

A General Management Framework

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Corporate sustainability is not just a buzzword—for many industry leaders and corporations, it has become an invaluable tool for exploring ways to reduce costs, manage risks, create new products, and drive fundamental internal changes in culture and structure. However, integrating sustainability thinking and practice into organizational structure is not a trivial task and it requires a vision, commitment and leadership. It also requires a systems approach with an appropriate management framework that enables design, management and communication of corporate sustainability policies.

This paper proposes a general framework for a Corporate Sustainability Management System (CSMS) which enables translation of the general principles of sustainable development into corporate practice by providing a systematic, step-by-step guidance towards a more sustainable business. Developed in collaboration with industry, it is designed to help improve the triple bottom line through sustainable economic development and environmental protection, while encouraging socially responsible business values. To facilitate an easier integration into the organizational structure, the CSMS follows the familiar models of Total Quality and Environmental Management Systems. While in principle applicable to industry in general, the system is flexible enough to be adapted to the specific needs of individual companies and the contexts in which they operate. Application of the CSMS is illustrated on suitable examples throughout.

Keywords: sustainable development; corporate sustainability; corporate social responsibility; management systems; sustainability indicators; sustainability reporting.

INTRODUCTION

Industrial systems cause and determine flows of material and energy in society and are therefore an important part of the human economy. Although industry is sometimes seen as a source of environmental degradation and social concerns, it is widely recognized that it is an essential part of development and wealth creation. Therefore, as an important social actor, industry must play a prominent role in creating a sustainable future (Azapagic and Perdan, 2000).

The challenge of sustainable development for any business is to ensure that it contributes to a better quality of life today without compromising the quality of life of future generations. If industry is to respond to this challenge, it needs to demonstrate a continuous improvement of its triple bottom line, i.e. economic, social, and environmental performance, within new and evolving governance systems. This general concept, known as corporate sustainability or corporate social responsibility, is shown in Figure 1.

Many companies and sectoral organizations are actively involved in the sustainability debate, trying to identify ways in which they could improve their triple bottom line and contribute to sustainable development. One of the main driving forces for this interest in corporate sustainability

has been legislation, which is increasingly being tailored towards promoting sustainable development. At the EU level, for example, the European Commission (EC) is actively involved in drawing up policies and legislation to encourage corporate social responsibility (CSR). These range from 'polluter pays' legislation through 'producer responsibility' policies to 'core labour standards' and 'social governance' and span all industrial sectors, from primary extraction to consumer products. Following its Green paper on *Promoting a European Framework for Corporate Social Responsibility* (EC, 2001a), the Commission has more recently issued a communication (EC, 2002) to further encourage the adoption of the CSR concept.

However, increasingly, a second major reason for incorporating sustainability into business practice is starting to emerge: it makes business sense to be more sustainable. In their recent report, the World Business Council for Sustainable Development (WBCSD) and the International Institute for Sustainable Development (IISD) identify a number of business benefits of addressing sustainable development concerns (IISD and WBCSD, 2002):

- Cost savings due to cleaner production methods and innovation—innovation and technology can improve material, energy and product efficiencies;

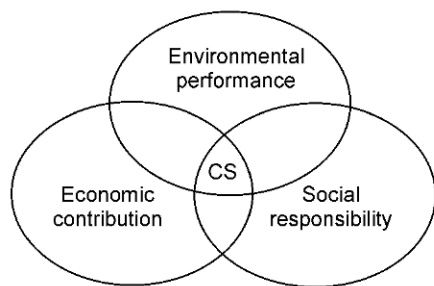


Figure 1. Corporate sustainability (CS) and the triple bottom line.

- Lower health and safety costs—a safe and healthy environment for workers and the community improves well-being, which translates into higher productivity, reduced compensation and damage suits, and reduced costs for social services and medication;
- Lower labour costs and innovative solutions—providing good working conditions can improve motivation and productivity, lower labour absenteeism or turnover and result in fewer union disputes;
- Easy access to lenders, insurers, preferential loans and insurance rates—lower risks achieved through implementation of a sustainable development strategy may lead to lower loan rates or insurance costs;
- Best practice influence on regulation—companies that follow best practice are much better placed than their competitors to influence how standards are set and the direction of regulatory change;
- Company's reputation—a commitment to sustainable development may enhance a company's reputation and secure its social licence to operate, also helping to attract the best people to join the company;
- Market advantage—a move towards integrated supply chain management may allow building deeper relationships with customers and capturing more value by providing service rather than selling products only;
- Ethical investors—the rapid expansion of the ethical and socially responsible investment movement poses a new challenge for companies as investors screen out those associated with unacceptable social and environmental performance.

However, achieving corporate sustainability is not a trivial task and is accompanied by a number of challenges. One of these is moving away from the notion that 'all bottom lines are equal, but some are more equal' and from trying to translate the benefits of sustainability into the usual financial measures. It is not always easy or possible to quantify direct financial benefits of corporate sustainability; and often, even if they are obvious, they may have longer-than-usual pay-back times. This calls for a paradigm shift in the way business is conducted and only forward-looking companies will be able to respond to this challenge.

Nevertheless, even such companies face a key challenge: how to translate the general principles of sustainable development into business practice. Addressing this problem requires a systems approach whereby corporate sustainability is not considered as a mere 'add on' but is systematically integrated into all business activities. This, on the

other hand, requires a robust sustainability management framework which enables:

- understanding of the key sustainability issues and actions needed to address them;
- measuring of performance and evaluation of progress to ensure continuous improvements; and
- communication of sustainability policies and progress towards sustainability to relevant stakeholders.

As yet, there are no generic 'off-the-shelf' management frameworks that enable a systematic and structured approach to managing corporate sustainability. Instead, individual, usually large, companies or sectoral organizations are developing their own, tailor-made systems, based on their needs. While it is important that a sustainability management system reflects the specific characteristics of each business and the context in which it operates, proliferation of different approaches to corporate sustainability that are difficult to compare is confusing for business, consumers, investors and the public and could lead to market distortion (EC, 2002). Therefore, there is a need to facilitate convergence and standardization of corporate sustainability management approaches. A framework which would be generally applicable and yet allow for specific characteristics of different businesses would help further awareness raising, adoption and dissemination of corporate sustainability practices.

In an attempt to facilitate this process and help corporations to contribute to a further understanding and application of sustainability on the practical level, this paper presents a framework for a Corporate Sustainability Management System (CSMS) that is potentially applicable across industry. Based on a systems approach and developed in collaboration with industry, it is designed to provide a structured step-by-step guide to organizations in defining a sustainability strategy and designing a practical course of action that will help them become more sustainable. To illustrate how the CSMS could be applied in practice, suitable examples are considered throughout.

CORPORATE SUSTAINABILITY MANAGEMENT SYSTEM

The general framework for the CSMS proposed here is outlined in Figure 2. As shown in the figure, if a corporate sustainability strategy is to be successful, it must emerge from and be embedded into the business vision and strategy. Corporate sustainability is not an 'add-on' as often assumed by some; rather, it should be viewed as an 'umbrella' tool which helps business identify and manage economic, environmental and social risks in an integrated way. For companies interested in long-term sustainable development, seeking to penetrate new markets and provide value-added solutions, an integrated approach to sustainability can unlock numerous opportunities to improve competitiveness and enhance reputation.

To facilitate an easier integration into the organizational structure, the CSMS has deliberately been modelled to be compatible with the familiar structure of the general management system standards (ISO, 2003), such as Total Quality Management (TQM) (ISO, 2000) and Environmental Management Systems (EMS) (ISO, 1996). This is also in line with the EC approach, which wishes to promote the

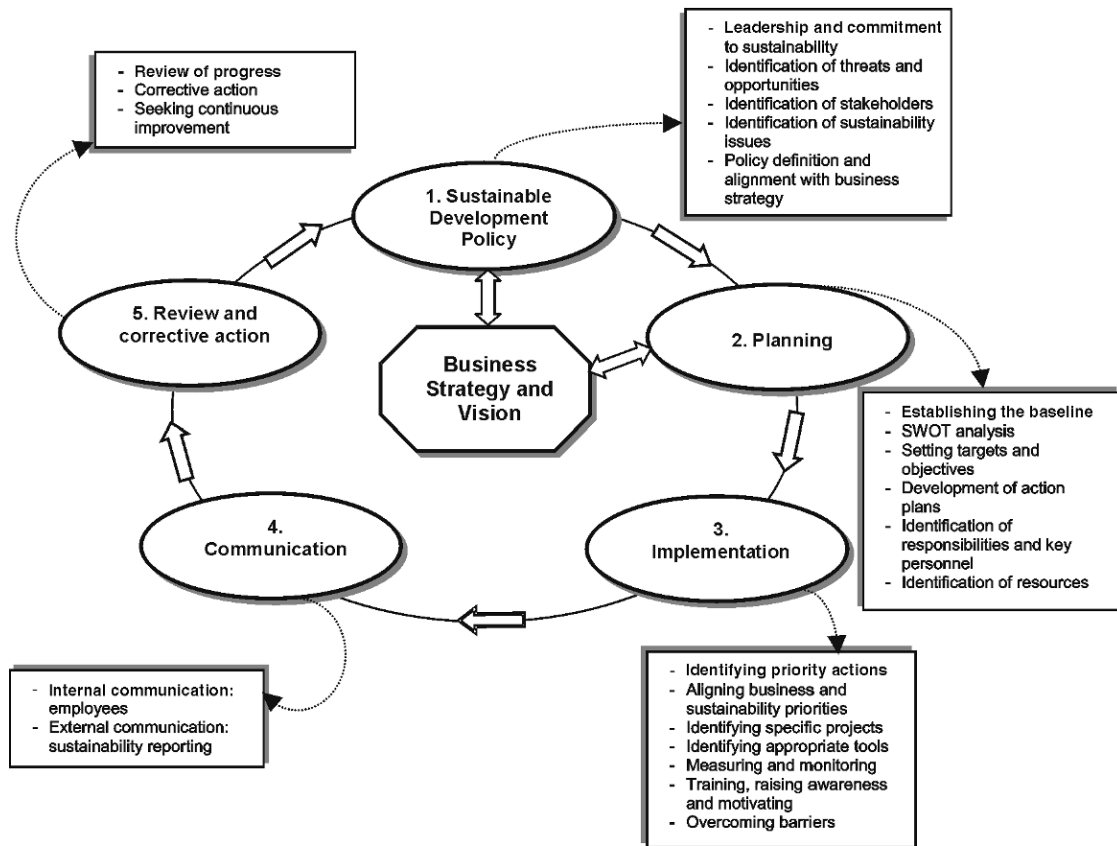


Figure 2. Corporate Sustainability Management System (CSMS).

uptake of EMS and, in particular, the EU Eco-Management and Audit Scheme (EMAS) (EC, 2001b) as a corporate sustainability instrument (EC, 2002). Similar to the TQM and EMS, the management system proposed here consists of five stages:

- (1) Policy development;
- (2) Planning;
- (3) Implementation;
- (4) Communication; and
- (5) Review and corrective action.

Each stage is broken down into a number of further steps, as described in the following sections.

Sustainable Development Policy

Definition of a sustainable development policy is the first stage in setting up the CSMS. The policy should encapsulate the set of core business values agreed by the company and should contain statements of principles or policies on social, economic and environmental responsibilities and stakeholder relationships. However, before a sustainability policy can be formulated and put into practice, the following has to be carried out:

- demonstration of leadership and commitment to sustainability;
- identification of threats and opportunities;
- identification of stakeholders; and
- identification of sustainability issues.

Demonstrating leadership and commitment to sustainability

The CEO, management board and senior management team have a critical role to play in setting up and implementing the CSMS by demonstrating leadership and strategic commitment to sustainability (DTI, 2001). Senior management are responsible for building successful, sustainable and competitive business and for projecting a long-term vision. Showing commitment to sustainability and how the vision integrates economic, environmental and social performance is part of that process. Directors are also responsible for the company's reputation—demonstrating leadership in sustainability helps manage and build reputation as well as trust by employees and external stakeholders.

As with other activities which are not directly linked with profit or product output, little will happen to move the sustainability agenda forward without the board's commitment. This commitment should be explicitly stated in the sustainable development policy as well as shown by direct actions in a manner consistent with the policy and sustainability strategy. However, by itself, the board's commitment will not guarantee that the policy and strategy will be implemented effectively. Nevertheless, the absence of that commitment will certainly make their implementation difficult.

One of the ways to demonstrate this commitment would be to appoint a 'sustainability champion' who would ideally be a senior person in the company, perhaps one of the directors. The 'champion' would be responsible to the board of directors for the management and implementation of the

CSMS. This would send a clear message about sustainability commitment to employees and external stakeholders but would also ensure that the high-level promises are translated into everyday practice. Further suggestions on this can be found below, under identifying key personnel and assigning responsibilities.

Identification of threats and opportunities

An important initial step in setting up a sustainability management system is identification of threats from unsustainable practices and opportunities for the company to benefit from the more sustainable ways of working. Once the main sustainability issues have been identified and the baseline established (in the next, Planning stage), this initial identification of threats and opportunities should be followed up by a more detailed sustainability SWOT analysis (see below) to enable prioritizing and setting of realistic targets and objectives. Strategic opportunities and threats may include technical, legislative, environmental, social, and other factors, all potentially leading to financial threats or opportunities. An effective external monitoring system is necessary in order to ensure that sustainable development policies, objectives and management systems are appropriate for the complex and rapidly changing world in which the business operates. Information should be gathered on key subjects, including:

- new and proposed legislation;
- industry practices, standards and future trends;
- technical developments (e.g. clean technologies and green chemistry);
- competitors' strategies; and
- community interests and pressure-group activities.

Opportunities for working with other companies within a sector should be assessed. Sometimes a company working alone can achieve only a limited amount, but there may be greater opportunities if companies within sectors work together. For example, several business, professional and trade associations have already initiated work on identifying sustainability issues and developing sustainability indicators for different sectors, including the UK Department of Trade and Industry (DTI, 2001), World Business Council for Sustainable Development (WBCSD, 2002), Global Reporting Initiative (GRI, 2002), and Institution of Chemical Engineers (IChemE, 2002).

As an example, Table 1 lists some of the potential business threats and opportunities that could be relevant to a number of different businesses. More examples are given later in the sustainability SWOT analysis, which is carried out in the Planning stage.

Identification of stakeholders

Engaging stakeholders is an important part of a corporate sustainability strategy. Understanding the interests and concerns of different stakeholders and the time-scales over which these interests are important are the prerequisites for a successful and sustainable business. Companies that understand what their stakeholders want will be able to capitalize on the opportunities presented, including a better-motivated workforce and a better relationship with external stakeholders.

Table 2 shows an example of a stakeholder analysis. It lists different stakeholders, the possible importance they place on sustainability concerns and time-scales over which these concerns may be important to them. For instance, customers would be expected to have a strong economic concern normally related to the price of a product. They would also have some environmental (e.g. whether the product can be recycled) and social (e.g. the use of child labour) concerns. It is to be expected that their primary time-scale would be short-to-medium, i.e. several months to around five years. Other stakeholders, such as creditors, would, in addition to their primary, short-to-medium term interests, be concerned about the company's performance over a longer period, i.e. longer than five years. This analysis may be helpful in deciding which aspects of sustainability a company should target in engaging the appropriate stakeholders and how to reconcile the different time-scales over which these issues appear to be important to different stakeholders.

For a better understanding of the needs and expectations of the stakeholders, a detailed company-specific stakeholder analysis should be carried out. This should set out both current and future needs, in order to capture the sustainable development priorities. The key is to analyse how the company's activities affect each group of stakeholders, either positively or negatively. A stakeholder analysis can be a useful way to identify areas of potential conflict among the stakeholder groups before they materialize.

Developing these statements of needs and expectations requires dialogue with each stakeholder group. Many companies have already established communication with certain stakeholder groups (e.g. local communities, NGOs and government bodies). This practice should be maintained and extended to engage the remaining stakeholders identified in the stakeholder analysis.

Identification of sustainability issues

The next step in setting up and implementing the CSMS is identification of sustainability issues (economic, environmental and social) relevant for the company's activities. These can be identified in a number of ways, including consultations with stakeholders and using any findings at the sectoral level. It is important to note that many sustainability issues will be common to different businesses and sectors which reduces the individual effort in this respect. Carrying out a pilot-case study based on a representative business activity or a part of business can also help in identifying the key sustainability issues. Some examples of sustainability issues that are pertinent to many types of industrial activities are given in Table 3.

Economic issues

Economic viability of business is at the heart of sustainable development because it generates profit and provides employment and through that contributes to general social welfare. Therefore, two types of economic issues are relevant for business: micro- and macro-level concerns. Micro-level issues are related directly to the economic performance of a company and include the usual financial measures such as sales, turnover, cash flow, profit and shareholder value. Macro-economic issues link corporate performance with considerations at the national and international levels; they

Table 1. Examples of opportunities to benefit from sustainability and threats from unsustainable practices.

Aspect	Opportunities and benefits	Potential threats and possible effects
Technical	<ul style="list-style-type: none"> Increased production efficiency and product quality through the use of clean technologies, increasing profits and reducing costs Increased material and energy efficiency through process optimization and clean technology, leading to direct financial benefits 	<ul style="list-style-type: none"> Continued use of old and inefficient technologies leading to financial and environmental inefficiencies Lack of understanding of the role of science and technology in helping the company to become more sustainable Unawareness of the external R&D efforts and development of sustainable technologies
Legislative	<ul style="list-style-type: none"> Improved ability to respond to and influence legislative changes through forecasting and better planning Improved relationships with government and regulatory bodies through proven environmental and social accountability Ability to provide guidance to the regulatory bodies to make informed decisions through self-assessment and monitoring 	<ul style="list-style-type: none"> Continued increased costs due to 'green' taxes (e.g. carbon tax) Lack of awareness of the forthcoming legislation and inability to participate in its shaping (e.g. EC initiatives and directives related to sustainability, carbon trading etc.)
Environmental	<ul style="list-style-type: none"> Reduced environmental risks (including reduced risk of pollution incidents) leading to possible reductions in insurance premiums Identification of inefficiencies in production through environmental monitoring leading to a better control of processes, conservation of resources and improved financial performance Enhanced EMS (ISO14001/EMAS) 	<ul style="list-style-type: none"> Poor environmental performance overall attracting fines and negative publicity and possibly leading to long-term liabilities Increased environmental incidents through poor planning and management Lack of data on own environmental performance making the company more open to criticism and less able to refute various claims Lack of understanding of key sustainability issues and areas of business which impact on sustainability leading to a worsening of environmental performance
Social	<ul style="list-style-type: none"> Increased motivation of staff who are able to see and measure real achievements Ability to attract and retain good quality people in the company through commitment to staff development and through proven social responsibility Improved health and safety leading to lower costs Trust building with NGOs and local communities through openness, transparency and partnership leading to reduced complaints and increased likelihood of securing licence to operate Consistent socially responsible practices in both developed and developing countries Communicating improvements and commitment to sustainability to external stakeholders (through sustainability reporting) 	<ul style="list-style-type: none"> Disputes and conflicts with communities and pressure groups resulting in a lengthy planning process and delays in permit approvals or rejection of planning permissions leading to major financial losses Poor external image and distrust by communities, NGOs and other stakeholders Inability to attract or retain good quality people due to poor image
Other	<ul style="list-style-type: none"> Raised profile and improved reputation Leadership in sustainability in the corporate group or sector Improved relationship with investors and customers through sound environmental, social and ethical record leading to financial benefits 	<ul style="list-style-type: none"> Short-term thinking and planning oriented only towards quick pay-backs without a long-term vision Loss of customers who screen their suppliers on sustainability performance Inability to penetrate new markets due to poor environmental and social image

Table 2. Examples of stakeholders and their possible sustainability concerns.

Stakeholders	Concerns			Time-scales	
	Economic	Environmental	Social	Short to medium	Long term
Competitors	☑	✓	✓	●	○
Creditors	☑	✓	✓	●	○
Customers	☑	✓	✓	●	○
Employees	☑	✓	☑	●	●
Local authorities	✓	☑	☑	●	○
Local communities	✓	☑	☑	●	●
NGOs	✓	☑	☑	●	●
Policy-makers	☑	☑	☑	●	○
Shareholders	☑	✓	✓	●	○
Suppliers	☑	✗	✗	●	○

(☑) Strong concern; (✓) some concern; (✗) no concern; (●) primary time-scales; (○) secondary time-scales. Time-scales: short to medium = several months to 5 years; long term = 5 years and longer.

Table 3. Examples of corporate sustainability issues.

Economic issues	Environmental issues	Social issues
Cost of non-compliance	Air emissions	Customer satisfaction
Contribution to GDP	Biodiversity	Child labour
Employment contribution	Energy use	Employee training and education
Investments (capital, employees, communities)	Global warming potential	Equal opportunities and non-discrimination
Profit	Noise	Health and safety (employees and citizens)
Sales	Resource depletion	Management quality (e.g. labour turnover, work satisfaction)
Shareholder value	Solid waste	Stakeholder involvement and liaison
Turnover	Transport	Social partnership and sponsorship
Value added	Water use and emissions	Wages and benefits

are usually related to the company's contribution to employment and GDP.

Environmental issues

Most companies are already aware of the main environmental impacts associated with their activities, mainly through compliance or perhaps as a result of implementing an EMS. For a better understanding of key environmental issues and more effective solutions, it may be helpful to identify sources of environmental problems by business area (e.g. production, transport, procurement, products etc.). The impacts along the whole supply chain should be considered, using the appropriate life cycle approaches (Azapagic, 2002).

Social issues

Social accountability is related to wider responsibilities that business has to communities in which it operates and to society in general, including both present and future generations. They can be grouped into the following broad categories (Azapagic and Perdan, 2000):

- human development and welfare (e.g. education and training, health and safety; management competence);
- equity (e.g. wages and benefits; equal opportunity and non-discrimination); and
- ethical considerations (e.g. human rights, cultural values, intergenerational justice).

These categories take into account both the interests of employees and those of the wider communities and aim to make business more equitable and ethical. In addressing these issues, business recognizes the value of human capital by providing a healthy and safe working and living environment, an opportunity for personal and community development and by engaging in a social partnership.

Policy definition and alignment with business strategy and vision

Sustainable development policy sets out the company's mission with respect to sustainable development. It should incorporate stakeholder expectations and contain statements of principles or policies on social, economic and environmental responsibilities (GRI, 2002). It should also indicate how sustainability strategy is aligned with the business strategy.

A number of companies have already developed their sustainability policy and are actively working towards it;

see GRI (2002) for specific examples. The following is an example of a possible sustainable development policy statement:

The Company and its Board of Directors are committed to contributing to sustainable development by working together as a leading provider of our products and services for customers. We aim to achieve this through:

- *long-term sustainable growth;*
- *development of value-added and environmentally benign solutions;*
- *responsible supply of our products and increased customer base;*
- *establishment of high performance and socially-responsible culture;*
- *active engagement with our stakeholders and commitment to addressing their concerns.*

This, more general, sustainable development policy can be developed further to incorporate other relevant company policies such as those on environmental issues, health and safety, procurement and community relations. It should enable the growing number of policies that companies are expected to adopt to be brought together in a single coherent management system, which could be more effective and less costly.

To facilitate a company-wide implementation, the sustainable development policy should be adopted by the board and its adoption communicated to all employees through the usual channels of communication used in the company.

Planning

Establishing the baseline

While statements of broad policy on sustainability strategy are important, the policy statement should be supplemented with a series of specific objectives and targets¹ for improvements. However, before a business can set sustainability objectives and targets, it must first find out where it is starting from. This means measuring a baseline economic, environmental and social performance, based on the key sustainability issues identified in the previous stage of the CSMS. For these purposes, a set of sustainability indicators has to be developed to enable measurement of the baseline as well as future performance monitoring. To ensure that they are a true

¹Objectives are statements of intents; targets set a level of performance that is sought within a certain timeframe and expressed, for example, as a percentage improvement relative to a baseline.

measure of the level of sustainability, the indicators should enable consideration of the whole supply chain relevant for the business (Azapagic and Perdan, 2000). The indicators should be quantitative whenever possible; however, for some aspects of sustainability qualitative descriptions may be more appropriate (e.g. for ethical concerns).

Table 4 gives examples of indicators, linked to the sustainability issues identified in Table 3. As shown in the table, in many cases an issue translates directly into an associated indicator; e.g. profit is both a sustainability issue and an indicator of performance. In some cases an issue will be expressed by several indicators, for example,

Table 4. Examples of sustainability issues, associated indicators and the units.

Issues	Indicators	Units
Economic		
Cost of non-compliance	Fines for economic, social and environmental non-compliance	Monetary units
Contribution to GDP	Ratio of value-added to GDP	%
Employment contribution	Number of employees relative to the total number of people employed in a certain region or a country	%
Investments		
	Capital investment	Monetary units
	Human capital investment	Monetary units
	R&D investment	Monetary units
Profit	Annual profit	Monetary units/yr
Sales	Tonnes or number of products sold	t/yr or number
Shareholder value	Share value or annual returns	Monetary units
Turnover	Annual turnover	Monetary units/yr
Value added	Value added	Monetary units
Environmental		
Air emissions	Emissions of: SO _x , NO _x , particles etc.	t/yr or kg/yr
Biodiversity	Loss of biodiversity (e.g. rate of loss of a certain species in a certain region or globally)	% or number
Energy use	Amount of energy used	MJ/yr
Global warming potential	Contribution to global warming	kg/yr or t/yr CO ₂ eqv.
Noise	Noise	db or number of complaints
Resource depletion	Rate of non-renewable and renewable resource depletion relative to the total world/regional reserves	%
Solid waste	Amount of solid waste (hazardous and non-hazardous)	kg/yr or t/yr
Transport	Number of kilometres travelled	km/yr
	Amount of fossil fuel used	t/yr
Water use and discharges	Amount of water used	m ³ /yr
	Emissions to water	g/l or kg/m ³
Social		
Customer satisfaction	Number of complaints	Number
Employee training and education	Percentage of hours of training relative to the total hours worked	%
	Percentage of employees that are sponsored by the company for further education	%
Equal opportunities and non-discrimination	Percentage of women/ethnic minorities in middle/senior positions	%
Health and safety	Lost-time accidents (H&S of employees)	hours/yr
	Number of external H&S complaints (H&S of citizens)	Number
Management quality	Employee retention rates	%
	Ranking of the organization as an employer in internal surveys	—
Stakeholder involvement and liaison	Number of consultative meetings with stakeholders	Number
Social partnership and sponsorship	Involvement in community projects	Number or type or value
Wages and benefits	Ratio of lowest wage to national legal minimum	%
	Health and pension benefits relative to the total employment costs	%
Integrated		
Sales and resource depletion	Mass of product sold per total amount of materials used	t/t
Turnover and energy consumption	Total turnover per amount of energy used	Monetary unit/MJ
Wealth and employment	Wealth created per employee	Monetary unit/employee
Human capital investment and profit	Human capital investment as percentage of profit	%

air emissions can include discharges of NO_x, SO_x and particles.

Whilst it is important to identify and quantify all relevant indicators, it may sometimes be difficult to make business decisions based on a large number of performance criteria. To help the decision makers in this respect, it may be useful to use integrated indicators, which link two or more types of sustainability issues and so reduce the number of decision-making criteria that need to be considered. Some examples of the integrated indicators are given in Table 4.

There is a lively ongoing activity in the development of indicators for different industrial sectors by different organizations and associations, including GRI (2002), IChemE (2002) and Industrial Minerals Association Europe (IMA-Europe, 2002). Further discussion on sustainability indicators for industry can be found in, for example, Azapagic (2003) and Azapagic and Perdan (2000).

An example of the baseline analysis for two indicators—amount of energy used and contribution to global warming (here equivalent to the total CO₂ emissions)—is shown in Table 5. The total energy used in the baseline year by four different sites in a company was found to be equivalent to 3.6 million GJ. The table also shows the split of energy use between two major business activities: in this case production and transport. For example, the majority (74%) of the energy used at site 1 is for production while at site 3 the major energy consumer (68%) is product transport. This information may be useful for identifying and targeting the 'hot spots' for improvements. The analysis also shows that the total energy use generates over 250,000 tonnes of CO₂. In theory, it is possible to offset the CO₂ emissions by sequestration of CO₂ by trees. In this example, the number of trees planted by the company in the baseline year has a potential to offset 46% of the total CO₂ emissions.² The largest sequestration potential is at site 4, which has a negative CO₂ balance achieved by planting more trees than theoretically required for the amount of CO₂ emitted. A similar analysis can be carried out for other sustainability issues to give the company an idea of where it is starting from and how to set more realistic targets and objectives.

Sustainability SWOT analysis

Based on the initial analysis of the threats and opportunities, as discussed above, a more detailed sustainability SWOT analysis should be carried out to identify the company's main strengths and weaknesses as well as the specific threats and opportunities. Table 6 gives an example of a sustainability SWOT analysis that could be applicable to a number of different companies.

Setting objectives and targets

As in any other business proposition, a corporate sustainability strategy requires setting objectives and targets so it is clear where the company wants to go, how it is getting there and how soon. Targets and objectives should be relevant to

the key sustainability issues and indicators identified in the previous stages of the CSMS. For example, performance objectives and targets may be set in terms of emission levels, waste generation and energy usage per tonne of output, or perhaps number of working hours lost due to accidents or illness. To ensure credibility of the sustainability policy and strategy, the targets should go beyond minimum legislative requirements. A number of factors will determine how ambitious the company is in setting the objectives and targets, including the current level of the company's performance, the costs of improvements and whether the company wishes to take a lead in sustainability or merely follow the activities of others in the sector. Benchmarking of the performance of other companies within the sector may help in this respect.

It is important that sustainable development objectives are clear, concise and, wherever possible, expressed as measurable targets. Establishing measurable targets is essential if management and others are to be able to assess whether the objectives have been met. Targets also need to be realistic but challenging and related to certain time-scales. Possible obstacles to meeting the objectives and opportunities for exceeding targets should be considered.

It is also important to ensure that the sustainability objectives complement the company's existing business strategy. In some areas, the objectives will be consistent with the strategy; in others, they may be in conflict with it. Consequently, the objectives (and in some cases the business strategy) may have to be modified.

Table 7 shows some examples of sustainability objectives and related targets.

Developing action plans

Development of action plans is a further step in preparation for the practical implementation of the sustainability strategy. These plans should be based on the set objectives and targets, taking into account the identified key sustainability issues and the related business areas as well as the results of the SWOT analysis. The action list should also include the responsibilities and the time-scale for each activity.

Identifying key personnel and assigning responsibilities

Different accountability structures for sustainability can be established in an organization. For example, the board could charge a director with line responsibility for the company's sustainability policy and strategy. The board as a whole would then monitor the implementation of the CSMS. Alternatively, the responsibility could rest with the whole board, reporting to the CEO or MD, who would be overseeing the implementation of the CSMS. This 'umbrella' role of the board could enable an easier integration of the CSMS and bridging of the existing functions and staff roles. In that way, directors would be responsible for ensuring that their portfolio of activities is managed in a sustainable way. For a more efficient implementation of CSMS, a Sustainability Management Team could also be formed. The Team would help co-ordinate and monitor the implementation of the CSMS as well as act as a sustainability think-tank. Figure 3 illustrates an example of the responsibility and reporting structure that could be adopted for the CSMS.

²There are different methods for calculating the potential for offsetting CO₂ emissions; the methodology used in this example is that developed by the Edinburgh Centre for Carbon Management (<http://www.ecom.uke.ac.uk/carbon.htm>).

Table 5. An example of establishing a baseline: energy consumption and contribution to global warming.

Indicator	Unit	Site 1	Site 2	Site 3	Site 4	Total
Amount of energy used	MJ/year	2.1E+09	6.06E+08	7.64E+08	9.66E+07	3.57E+09
By production	%	74	—	32	57	—
By transport	%	26	—	68	41	—
Contribution to global warming	t CO ₂ eq/year	148,392	42,767	54,433	6901	252,493
Trees planted	Number/year	13,775	125	7225	11,300	32,425
Potential to offset CO ₂ emissions	t/yr	48,993	445	26,068	40,190	115,695
Percentage CO ₂ reduction	%	33	1	48	582	46

The responsibility for sustainability also needs to be linked to the company's recognition and promotion systems. This should include ensuring that responsibilities are assigned in a manner that holds key executives accountable. It also means ensuring that the reward and promotion systems recognize those people who achieve, or help to achieve, sustainable development objectives.

Identifying and allocating resources

Although the implementation of a sustainability strategy should by definition reap economic benefits (if it is not economically viable, then it is not sustainable), some financial resources will be required to set up and implement the CSMS. This would mainly be indirect costs, through staff time contributed in the various stages of CSMS. In addition

Table 6. An example of sustainability SWOT analysis.

<p>Strengths</p> <ul style="list-style-type: none"> Relatively strong financial position with a steady increase in profits Ability to produce higher value-added products Possibility to penetrate new developing markets Good reputation and a possibility to improve that image Good relationships with local communities Good relationship with the government and enforcing bodies Demonstrated environmental responsibility Possibility to offset CO₂ emissions through forestry management Bold emphasis on Health and Safety Well established Quality Control procedures Relatively high interest of employees in the environment and sustainability 	<p>Weaknesses</p> <ul style="list-style-type: none"> Emphasis on short-term returns and lack of long-term vision (10 years and beyond) Emphasis on quantity (of production) rather than provision of value-added products and services Limited understanding of the corporate sustainability concept and potential benefits Relatively high energy consumption and CO₂ emissions Relatively low awareness of the current developments regarding climate change and carbon trading resulting in a loss of income and a potentially negative image Relatively high number of fatalities and lost-time accidents No formal environmental policy Lack of formalized environmental management systems Company car policy does not encourage the use of more sustainable transport modes Relatively large workforce turnover resulting in loss of expertise and continuity Insufficient internal communication Difficulties in attracting and retaining good quality people Low percentage of women and ethnic minorities in senior positions
<p>Opportunities</p> <ul style="list-style-type: none"> Building on the existing image and taking the lead in sustainability in the group and/or in the sector Further improvement of the relationship with local communities through commitment to sustainability Ability to provide guidance to the regulatory bodies to make informed decisions through self-assessment and monitoring Improving relationships with the government and regulatory bodies through proven track-record Reducing environmental risks and incidents and future liabilities Identifying inefficiencies and improving financial and environmental performance through self-assessment and environmental monitoring Improving internal and external communication Improving public relations Increasing motivation of staff and opportunity to attract and retain good quality people Improving relationships with investors and customers through sound environmental, social and ethical record leading to financial benefits 	<p>Threats</p> <ul style="list-style-type: none"> Increasingly stringent legislation Increasingly difficult 'social permitting' process Increased public awareness of sustainability and pressure-group activities Disputes and conflicts with communities and pressure groups Continued lack of understanding of key sustainability issues and areas of business which impact on sustainability and inability to respond to government and other initiatives on sustainability Further loss of income due to increasing costs of 'green' taxes Lack of own data on environmental and social performance making the company more open to criticism and less able to refute various claims Increased environmental and health and safety incidents and occupational diseases leading to litigation and negative publicity Loss of customers due to the adoption of the sustainability principles further up in the supply chain and inability of the company to respond adequately Inability to penetrate new markets in the longer term through poor environmental and social image

Table 7. Examples of sustainability objectives and related targets.

Objective	Target
To optimize social and economic contribution to society	To improve employment opportunities by securing a minimum of 50 new jobs annually
To protect the safety and health of employees and other stakeholders	To reduce the number of injuries by 50 per cent by the end of 2003
To maximize efficient utilization of resources at minimum environmental impact	To reduce emissions of greenhouse gases per unit of production by ten per cent by 2005 based on the 2000 levels
To enhance the human potential and welfare of employees and communities	To increase human capital investment by one per cent of the profit annually

to the indirect costs, some direct costs will also be incurred for some of the sustainability projects (which are defined in the next, Implementation, stage). It is important that these costs are identified and budgeted for, so that the implementation of the CSMS is not hampered by the lack of financial resources.

Implementation

The Implementation stage involves identifying sustainability priorities and aligning them with business priorities. Appropriate projects and tools will have to be identified to help business become more sustainable. A monitoring and reporting system is also established in this stage.

However, more fundamentally, the Implementation stage also involves changing the corporate culture and employees' attitudes. These changes cannot be achieved overnight and normally a three-to-five-year plan with one-year milestones will be needed, including detailed plans on overcoming the barriers (DTI, 2001). The implementation of a sustainability

strategy must have a full 'buy-in' if it is to be effective. This in turn requires broad consultation, training, awareness raising and motivating.

Priority actions and alignment of business and sustainability priorities

Key sustainability issues identified in the first stage of the CSMS (Sustainable Development Policy) should be used to guide the identification of priority actions for business. For example, if the cost of climate change levy is going to affect profits, then an energy efficiency programme could be initiated to identify possibilities for reducing energy use as well as for using cleaner energy sources.

In this example, as in many other cases, sustainability and business priorities would be naturally aligned. However, in reality, this may not always be the case and some repositioning may be required. Defining business priorities is a highly dynamic process as the priorities can change quickly, sometimes from month to month. Sustainability priorities, on the other hand, can remain unchanged for much longer, usually years and decades. Furthermore, as illustrated in Table 2, different stakeholders will also 'operate' on different time-scales. Hence, a major challenge in developing and implementing a sustainability strategy is to reconcile these different time-scales. This requires refocusing from short-term thinking to a longer-term vision and clear identification of the benefits as well as the threats should the business and sustainability priorities become unaligned.

Identifying projects for integration of sustainability into business practice

Key sustainability issues identified in the first stage of the CSMS (Sustainable Development Policy) should be used to guide the identification of specific projects that would help achieve the set objectives and targets. The projects should target the 'hot spots' identified for each business area, e.g. production, transport, products, procurement, employees,

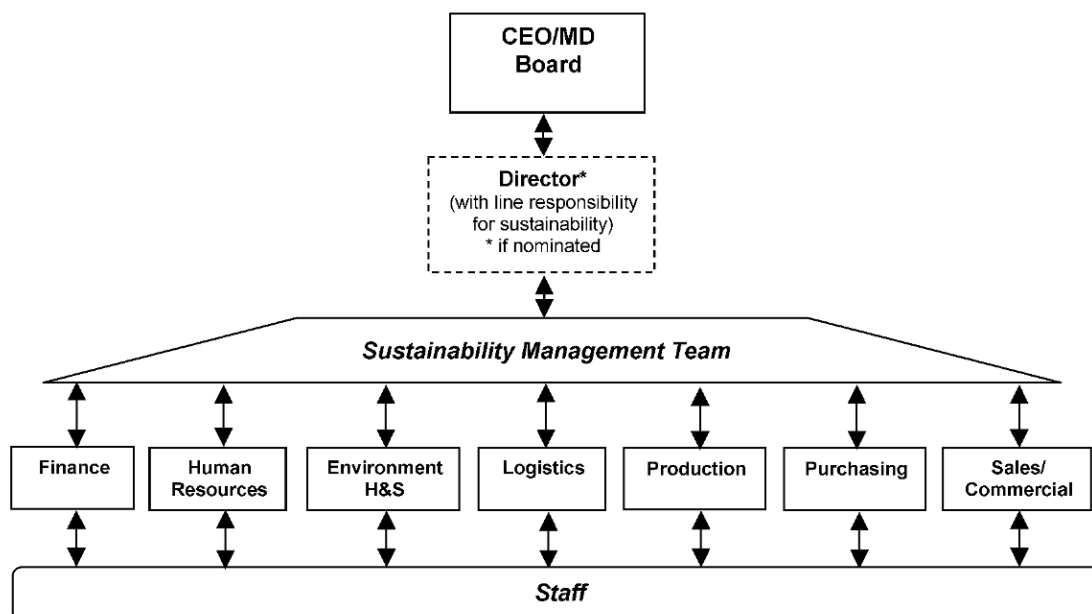


Figure 3. An example of the reporting and responsibility structure for CSMS.

etc. Detailed action plans should be developed, specifying staff responsibilities and target dates for completion.

For example, projects that are aimed at increasing production efficiency through better use of materials and energy will lead to a simultaneous improvement of the triple bottom lines: improved energy efficiency results in cost savings and increased profits, while at the same time reducing the use of fossil fuels, local pollution and contribution to global warming. From a social point of view, this helps to improve the relationships with stakeholders as it demonstrates that a company uses resources in a responsible way, improves quality of the local and global environment and hence, quality of life. Similarly, projects for sustainable product design with emphasis on quality rather than quantity, help to prolong the life-time of both the products and primary resources, enhance financial returns through increased value-added and usually lead to waste minimization and lower environmental impact overall.

Good procurement practices can also assist companies in becoming more sustainable. This includes replacing fossil-fuel based electricity by a 'green' energy supply, purchasing recycled packaging and re-using 'wastes' from other companies as raw materials. More sophisticated purchasing policies also include sustainability assessments of suppliers.

Further examples of specific actions that could be effected are related to the work-force. Companies which can demonstrate their commitment to people and their values will raise staff morale and attract and retain the best talent who are more likely to help secure the long-term viability of the business. This commitment could be demonstrated through:

- fair remuneration packages, including pension and health benefits;
- equal opportunities and non-discrimination;
- good health and safety conditions;
- reward schemes for innovative ideas for improvements in the triple bottom line;
- capacity building through training and transferable skills development;
- succession planning and clear career progression; and
- ethical corporate behaviour.

A useful compilation of the case studies that describe specific projects used by different companies to integrate sustainability into business practice is provided by the WBCSD (2002).

Identifying the appropriate tools

A number of tools can be used to help implement a sustainability strategy. Two types of tool are distinguished here:

- tools for achieving cultural change; and
- tools for measuring and improving the level of sustainability.

Several tools are commonly used to achieve cultural change and embed sustainability into business practice. In a recent survey by the PWC (2002), the three most useful tools for managing change are corporate strategy, change management programmes and formal risk management procedures.

Sustainability indicators can be used as one of the tools for measuring the overall level of sustainability and for monitoring progress. The indicators could also be combined

with the balanced business scorecard, a tool often used by companies for measuring different aspects of business (and social) performance. Other tools used routinely by many companies that could also be used for measuring and improving the level of sustainability include:

- mass and energy balances—for identification of material and energy inefficiencies in the system;
- system optimization—mathematical modelling and optimization approaches for identification of options for optimal improvements;
- environmental audits and environmental management systems (e.g. ISO 14000 and EU EMAS)—for identification of environmental inefficiencies and impacts from a process or system;
- environmental, health and safety risk assessment—for identification of major risks associated with products, processes or business activities;
- environmental and social impact assessment (EIA and SIA)—for assessment of potential impacts of proposed installations;
- life cycle assessment (LCA)—for identification of 'hot spots' in the life cycle and for comparison of equivalent products, processes or business activities from 'cradle to grave'.

Measuring and monitoring

Measuring and monitoring is one way to ensure that sustainability objectives and targets are being met. Establishing a sustainability baseline and then monitoring the performance over the years will give a good indication of the direction in which the company is going - either towards or away from sustainability. It will also provide data for internal and external communication, particularly for sustainability reports (see External communication: sustainability reporting, below).

Sustainability indicators are used for these purposes. Some examples of the indicators are given above; further detail can be found in, for example, Azapagic and Perdan (2000), GRI (2002) and IChemE (2002).

Data availability and collection

An important issue in the implementation of the CSMS is data availability and collection. It is therefore necessary to establish which data are already available and where in the company they can be obtained. For example, financial and some social data are normally available centrally from the company's head office while environmental data may be available from the individual sites and operations. It is also important to have an idea of the effort that will be required in collecting the data and carrying out sustainability assessments. To minimize the amount of effort for data collection, it may be advantageous to develop a centralized data collection system with a unified database format that is compatible with the existing databases so that the data can easily be imported and manipulated.

Awareness raising, training and motivating

Understanding the meaning of sustainability generally and how it relates to the company's activities is critical to the evolution and implementation of the CSMS. This understanding should be evident throughout the company and

among all employees. However, this is not an easily achievable task as the level of knowledge and understanding of the concept of sustainability and what it involves on the practical level is often limited. Awareness raising and training are therefore essential if sustainability is going to be taken seriously and integrated into the business practice. These activities will also facilitate the necessary cultural change, without which little will be achieved in making business more sustainable. Awareness raising can be achieved in a number of ways, including bulletin boards, posters and newsletters which give simple, easy to understand facts about sustainability and explain what each individual can do to contribute towards making the company more sustainable. Internal reporting on corporate sustainability is another powerful tool for awareness raising. Furthermore, the usual training activities (e.g. for health and safety) could be expanded to include a short introduction to sustainability and its relevance to a particular training activity. Similar could be done in leadership training courses to encourage management to be innovative and to take a lead in corporate sustainability (DTI, 2001).

Employees should be encouraged to put forward innovative ideas that could lead to an improved level of sustainability. This could be linked to a financial and non-financial incentive scheme for best ideas, thus further motivating employees to participate. The increased awareness and participation of employees will not only generate practical ideas, but will also increase enthusiasm for the sustainability programme itself. Most employees enjoy being part of and contributing actively in an organization that is committed to operating in a socially and environmentally responsible manner.

Overcoming barriers

Successful implementation of the CSMS also requires identifying and overcoming the barriers. As already noted, one of the major challenges in this respect is cultural change. This requires the management to develop a corporate culture that encourages responsible behaviour with respect to all aspects of sustainable development. The active and visible involvement of directors and senior management can be a powerful force in creating a supportive culture in which sustainable business practices can flourish. However, if the senior management is not convinced of the benefits or prepared to take on the challenge of sustainable development, this cultural change will not occur and will continue to act as one of the major barriers to making business more sustainable (DTI, 2001).

Other potential barriers include:

- available staff time and resources;
- financial priorities, rendering everything else less important;
- difficulties in expressing the benefits of sustainability in monetary terms;
- pay-back times longer than usual;
- lack of awareness and understanding of the principles of sustainable development and what can be done on the practical level.

It is important that management is aware of these and other barriers early in the implementation of the CSMS, so that they can be tackled in an appropriate way, or so that the

sustainability action plans and priorities can be re-examined accordingly.

Communication

Effective communication is essential for promoting the concept of sustainable development as well as for promoting the company's achievements. Therefore, the next stage of the CSMS process is the development of meaningful internal and external reporting procedures, outlining the company's sustainable development objectives and comparing performance against them.

Internal communication

Internal reporting on the company's achievements with respect to sustainability and the related benefits can have a significant effect on corporate culture. For example, the company could ask the line managers to include in their regular reporting procedures a statement on whether they have achieved the sustainable development targets. Similarly, the board could request periodic reports from senior management on whether these objectives have been achieved.

A summary of progress should be communicated to all employees at regular intervals. They should also be made aware of and have access to the annual sustainability reports produced for external stakeholders.

External communication: sustainability reporting

Companies are increasingly expected to communicate their performance to external stakeholders. A large number of companies already produce corporate sustainability reports and there is a lively activity by various business organizations in trying to standardize the reporting structure to enable easier cross-comparisons. GRI, which is emerging as the most widely followed reporting standard, recommends the following elements to be included in a sustainability report (GRI, 2002):

- vision and strategy with a statement from the CEO;
- overview of the company's structure and operations and of the scope of the report;
- governance structure and management systems including stakeholder engagement;
- sustainability indicators: economic, environmental, social and integrated.

Sustainability reporting can be used to provide information about challenges and achievements to the stakeholders as well as a marketing tool, associating the company with sound environmental management and sustainable activities. It also helps to maintain transparency and to respond to emerging issues and pressures.

Review and Corrective Action

The final stage of the CSMS involves progress review to establish whether the objectives and targets set in the sustainability policy have been met. The review periods can vary and normally range from 3 months to one year. If the review shows that the targets have not been met, the reasons should clearly be identified and an appropriate corrective action followed to ensure that the targets are

achieved in the next planning period. Alternatively, the objectives should be reviewed and more realistic targets set.

However, if the targets have been met and the achievements clearly communicated, the process starts again with the policy review and re-alignment with the business strategy as appropriate. In this way the company will be fully aware of its performance and the direction of its progress—either towards or away from sustainability.

After a first pass through the CSMS cycle, the company may also wish to assess how good its sustainability strategy is, by using the questionnaire developed by the UK Government Sustainable Development Commission (SDC, 2002) and given in the Appendix.

The review process should ensure continuous improvement and progress towards sustainability. It should also help the company to answer the practical questions on what exactly and how much it needs to do to improve its performance in a particular area to become more sustainable.

Answering this question is indeed one of the most important aims of developing and implementing the CSMS proposed here. An initial, pilot testing of the framework in a company has indicated that it provides a powerful approach to sustainability management and that it can provide guidance to companies on what they need to do to become more sustainable. However, longer-term testing of the methodology is necessary to support these preliminary findings; this work is under way and its results will be the subject of a future paper.

CONCLUSIONS

Building a sustainable business is a long-term and multi-level challenge which requires strategic thinking and a systems approach. Corporate sustainability is not an 'add on' but must be an integral part of business and, like all other business activities, it must be managed in an appropriate way.

A corporate sustainability management system (CSMS) proposed in this paper offers a framework for a systematic and structured incorporation of sustainability thinking into corporate practice. Following a systems approach and modelled to be compatible with other management systems, including TQM and EMS, the CSMS provides a practical step-by-step guidance on:

- identification of stakeholders and sustainability issues;
- development of a sustainable development policy;
- sustainability SWOT analysis;
- measuring the level of sustainability by using sustainability indicators; and
- communication of sustainability policies and progress, including sustainability reporting.

Rather than being prescriptive, the CSMS enables companies to design, manage and communicate corporate social sustainability in the way that is tailored to their specific needs and the contexts in which they operate. It also provides a transparent audit trail of the sustainability management process enabling evaluation and continuous improvement of corporate sustainability performance.

However, it must be made clear that a sustainability management system on its own will not make a business sustainable. Whilst it can facilitate this process, it is only an instrument and a tool which will have a limited success

without a full commitment to making business more sustainable. This requires a paradigm shift in the way traditional business is conducted—only proactive and forward-thinking companies will be able to respond to this challenge.

APPENDIX: HOW GOOD IS YOUR SUSTAINABILITY STRATEGY? A GUIDE FOR SELF-ASSESSMENT

The following questionnaire is based on the questionnaire developed by the UK Sustainable Development Commission (2002). The questionnaire should help companies to assess how effective their sustainability strategy is once it has been put in place and implemented. The questionnaire is in four parts and examines how well the sustainability strategy follows the general principles of sustainability; how sustainable is the current performance of the company; how good are the targets and objectives for improvement and how the information is disseminated.

The Questionnaire

1. *General principles*

To what extent does the strategy:

1. Show a recognition and understanding of the meaning and objectives of sustainable development in general and as they relate to the company?
2. Acknowledge the costs and limits of unsustainable activity generally and the benefits of action to achieve sustainability?
3. Acknowledge the need for adopting the precautionary principle?
4. Place people at the centre of the strategy and involve stakeholders including supply chain partners, customers and waste disposers?
5. Demonstrate a high level of commitment to the implementation of the strategy within the company?

2. *Assessment of current performance of the company and recent change*

To what extent does the strategy:

6. Identify clearly and openly the general economic, social and environmental impacts both good and bad, of the company and take responsibility for those impacts? Does this include:
 - consideration of the supply chain,
 - source of raw materials and energy,
 - impacts from manufacture and processing,
 - impacts from transport,
 - impacts on communities and employees,
 - use of products and final destination,
 - world-wide impacts as appropriate?
7. Identify threats to the company from unsustainable practices and identify opportunities for the company to benefit from more sustainable practices in general?
8. Assess the past performance of the company (clearly defined) against appropriate indicators and assess the move towards (or away from) sustainable development over time. Does this assessment reflect the concerns of stakeholders and the wider public? Can additional or more appropriate indicators be added? Can these

indicators be applied to future performance for consistent reporting?

3. Specific company performance, indicators and targets

To what extent does the strategy:

9. Identify opportunities for the company to contribute to improvements and breakthroughs (such as technological innovations) which might help achieve sustainable development? Does the strategy include proposals for their implementation (including the costs of such work)?
10. Identify opportunities for the company to work together with other companies in the sector to achieve greater progress?
11. On the basis of 6–10 above, establish indicators and targets for the company to achieve improvements in terms of tangible benefits and measurable criteria for success?
 - Are these indicators realistic and challenging?
 - Are time-scales established?
 - Are the data to be used transparent and verifiable?
 - Is it clear what factors may influence the ability of the company to deliver these targets?
 - Are costs and benefits identified?
 - Does it also identify action which may be necessary to alleviate any limiting factors?
12. Assess whether the impact of implementing the strategy as a whole is likely to be positive/neutral/negative in terms of the relevant indicators. Are there ways in which the strategy could be refined to make the effect more positive or less negative?
13. Require annual reporting against indicators for improvement? Identify a process by which the strategy can be reviewed and enhanced as lessons are learnt?
14. Take a long-term perspective in addition to short-term indicators (at least 10 years)?

4. Exemplification, application and dissemination

To what extent does the strategy:

15. Relate its assessment of performance and future targets and indicators to practical and actual examples?
16. Establish and seek to disseminate and encourage best practice and bench-marking?
17. Raise awareness of sustainability issues among the employees and a wider audience?

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