

# Environmental Principles Training Package

*Module*

**4**

FROM PRINCIPLE TO PRACTICE



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## MODULE 4: FROM PRINCIPLE TO PRACTICE

### Session 1: Steps to Sustainability/ The Global Compact Performance Model

**TIME:** 2 hours

#### OBJECTIVES

The objectives of this session are to:

- Briefly review some of the procedural requirements for companies to participate in the Global Compact.
- Provide an overview of some of the critical steps that companies can take towards effectively implementing the three environmental principles of the Global Compact.
- Provide some practical case studies that illustrate what various leading companies have done in terms of promoting environmentally responsible behaviour, using these as a means for identifying useful lessons for the delegates.
- Outline the benefits of participating in the Global Compact's Global Learning Forums:

#### SUGGESTED PROCEDURE

The day before this session is scheduled, encourage delegates to read the following:

- Seven Steps To A Greener Company: From Green Trimmings to a Green Soul
- Case Study 4-1: Interface

It is imperative that you – as the trainer – read through the speaker's notes prior to the day's training. There are a number of case studies which are highlighted in certain sections (pertaining to slides), and you should be familiar enough with these to be able to illustrate a point, or provide an example. Delegates should be made aware of these, and the suggestion made that they read the more detailed case study after the session.

(Note: all case studies are included separately in the accompanying *Delegates' Manual*). When reading these case studies, delegates should identify and keep a note of:

- The key lessons / messages from the case study.
- Their thoughts on the relevance of the case study for their company.

It is suggested that you spend approximately 45 minutes on the PowerPoint presentation. Exercise 4-1 should take approximately 1 hour. Allow a maximum of 15 minutes for questions and discussion at the end of the session.

### Speaker's Notes

**Slide 1** Title slide

**Slide 1** How to participate in the Global Compact

NOTE: *This slide relates only to companies that have not yet signed on to the Global Compact. However, while it is of particular relevance to such companies it is suggested that there is nevertheless merit in including reference to this, so that delegates understand the mechanisms for joining. This may need to be updated to reflect any changes to UNGC requirements.*

To participate in the Global Compact, a company:

- Sends a letter to the UN Secretary General expressing support for the Global Compact.
- Publicly advocates the Global Compact and its principles in its mission statement and reports, press releases, speeches etc.
- Submits an annual posting on the Global Compact website detailing concrete steps that have been taken in acting on these principles, and any lessons learned.
- Publishes a description of the ways in which it is supporting the Global Compact and the ten principles in its annual report.
- Joins with the UN in partnership projects of benefit to developing countries.
- Sets in motion changes to business operations so that the Global Compact and its principles become part of strategy, culture and day-to-day operations.

If there is time, you could briefly explain how the company *Novartis* went about participating (see box)

#### **Participating in the UN Global Compact – The Novartis experience**

- In July 2000, the chair and CEO of *Novartis* publicly announced that the company would support the Global Compact as a catalyst for concrete actions.
- A few weeks later, a new version of the *Novartis* code of conduct was issued containing a reference to the Global Compact, including the *Universal Declaration of Human Rights*.
- From the start, the implementation of the Global Compact principles was seen as an open-ended process where the aim was to keep it alive and continually renewed by injecting new impetus.
- A steering committee was set up to ensure a company-wide commitment to the Global Compact, consisting of senior personnel from various *Novartis* Group companies.
- A Global Compact clearing house was created which initiated a survey to identify potential deficits against the principles of the Global Compact in the company and with its business partners.
- Responsibility for follow-up was assigned to specific employees. It was seen as vital that all employees were sufficiently informed so they understood what the strategy and new corporate citizenship guidelines inspired by the Global Compact meant in practical terms. An interdepartmental communications team developed a 'roll-out kit' for all potential users of the guidelines.

Note: For a more extensive description of the implementation of the Global Compact at Novartis, visit [www.parallaxonline.org/peglobalhuman5p.html](http://www.parallaxonline.org/peglobalhuman5p.html)

Explain that in the following session, you will outline the recommended road map to help a business embrace the Global Compact's three environmental principles. The approach is based on the Global Compact Performance Model (developed under the leadership of Claude Fussler of the WBCSD in 2003).

Refer delegates to the following reference which they may find useful:

- Fussler C, Cramer A, and van der Vegt S. (2004) *Raising the Bar: Creating Value with the United Nations Global Compact* Sheffield, Greenleaf Publishing

At this stage it may be useful to point to the table in the Delegates' Manual (Appendix 1) which outlines some key steps to implementing the Global Compact. These steps are based loosely on the Performance Model (which is explained in more detail below). Delegates should see this as a basic framework only. Encourage them to add to it and adapt it to suit their own individual needs and the needs of their company. The table has been designed for delegates to add their own notes in each step.

### Slide 3 The Deming Cycle

The Global Compact Performance Model is seen as an adaptable structure similar to the prevalent quality excellence model that links principles, business processes and results.

The model provides a way of achieving continuous improvement and for sharing experience. Its application helps organisations gain a better understanding of the relations between principles, codes and standards and how to integrate them into daily business activities with the help of a new group of management tools. The purpose of a performance model is the maximisation of outputs with the minimisation of inputs. Targets are more likely to be met or exceeded with less time, effort and financial resources. The execution will also provide a clearer understanding about why a particular approach works, and how it may be improved. Individual skills may be enhanced, as will the capacity of the organisation. The goal is to strive for ever lower rates of failure (pollution, accidents, public health crises, and so on), also known as “continual improvement.” Most quality management models are built on the principle of continuous improvement in a context of continuously more demanding, competitive benchmarks. The organization adopts a never ending cycle of improvement steps. This cycle is named, after its author, the Deming Cycle or the Plan-Do-Check-Act cycle.

In the context of integrating the Global Compact, this means that a company would make a first assessment of where it stands relative to the Global Compact's three environmental principles.

The process would be as follows:

- **Act:** set specific performance objectives
- **Plan:** consider resources and steps required to achieve the objectives
- **Do:** what has been identified to reach the objectives
- **Check:** the results against the objectives and plans
- **Act:** to correct deviations, integrate learning from doing and setting a new set of objectives for further improvements.

The continuous improvement cycle works through the various elements of the corporate model. It propels the organisation on a course of continuously more demanding benchmarks. Every cycle brings the organisation to a new level of mastery and control that is focused on the needs of the 'customer'. The 'customer' can also include the community and the environment, or whoever and whatever the organisation decides to include in its sphere of influence and responsibility.

NOTE: *Further detail on some of the practical environmental management steps involved in the Deming Cycle are provided in slides 14-18 of Module 4, Session 2.*

## Slide 4 The GC Performance Model: four management elements

The framework contains four categories of management elements:

- **Vision:** What organisation do we want to become?
- **Enablers:** Who will get us there and by which means and practices? This will involve a review of:
  - Leadership
  - Empowerment
  - Policies and Strategies
  - Resource allocation
  - Processes and Innovation
- **Results:** What improvements will we make and what impacts will these have on people, society and the value chain?
- **Reporting:** How do we measure and communicate our achievements?

Each of the model's sections represents the criteria against which to assess an organisation's progress towards excellence. Each of the criteria has a high-level definition, supported by a number of explanatory elements – enablers and results. The enablers are those elements that define how the organisation operates, and the results group are those elements that define what the organisation achieves and contributes. The figure depicts the close integration of those elements into the performance model. Each of these elements are further unpacked in the following slides, with specific reference to relevant tools, and case studies applicable to each.

The performance model is applicable to all organisations regardless of sector, size or geography. Nevertheless, each organisation will apply specialised tools that represent its specific circumstances and know-how. GC Tools are covered in more detail in Session 2 of Module 4.

### Explanation of icons



#### **Codes and Standards**

*The globe icon represents the direction obtained from universal declarations, principles, codes, regulations, standards and literature.*



#### **Management Tools**

*The tool icon represents any management tool or conceptual instrument that is recommended as a way of engaging with the Global Compact.*



#### **Communication and Partnership**

*The handshake icon represents any form of employer/employee involvement, partner/stakeholder interaction, dialogue or communication.*

## Slide 5 Forming the Vision

Many companies change as a result of a particular event or crisis that triggers a reaction (a classic example of this from an environmental perspective was the significant changes in approach that were introduced in Shell following the negative publicity that it received over Brent Spar events in Nigeria).

The three environmental Global Compact principles will enrich the company vision and this is where they must be integrated. Vision is best grounded in dialogue with employees and key stakeholders. It is however a key responsibility of top management to make sure that a vision is formulated.

## GETTING THERE



### *Codes and Standards*

- Review the three Global Compact environmental principles.
- Refer to the Stockholm, Rio and Johannesburg Declarations.
- Analyse major economic, social and environmental world trends (e.g. the Millennium Development Goals for 2015). [www.developmentgoals.org](http://www.developmentgoals.org)
- Refer to the UNDP's Business and Millennium Development Goals briefing, which provides a framework for action on how companies and business coalitions can work with the UN system to achieve the Millennium Goals.  
[www.iblf.org/csr/csrwebassist.nsf/content/f1d2b3aad4.html](http://www.iblf.org/csr/csrwebassist.nsf/content/f1d2b3aad4.html)
- Refer to the Factor 4/Factor 10 and Eco-Efficiency studies. [www.wupperinst.org](http://www.wupperinst.org)
- Refer to 'Values in Action: Formalising Your Company's Values' from the BSR, 2001.  
[www.bsr.org](http://www.bsr.org)



### *Management Tools*

- Refer to the SIGMA Management Framework. [www.projectsigma.com](http://www.projectsigma.com)
- Refer to the Wuppertal Institute's Compass (Companies' and Sector's Path to Sustainability).  
[www.wupperinst.org](http://www.wupperinst.org)
- Select an Environmental Management Strategy (Module 4, Session 2)
- Refer to the UNEP Cleaner Production Declaration (<http://www.uneptie.org/pc/cp/>)
- Include environmental issues within your scenario planning.



### *Communication and Partnership*

- Make use of Communication Tools to undertake employee and stakeholder dialogue (Module 4, Session 2)

### Case studies

- RMC Group – used the SIGMA Management Framework ([www.rmc-group.com](http://www.rmc-group.com))
- European Aluminium Industry – used Compass to detect and facilitate sector-wide sustainability improvements ([www.oekoeffizienz.de/english/content/agzu/index.html](http://www.oekoeffizienz.de/english/content/agzu/index.html))

**Slide 6 Enablers (1)*****Identify Leadership***

This is about management driving the vision through the organization. Leadership implies being personally involved where it matters, serving as a role model of values and action and as a supporter of the teams who are responsible for reaching the objectives derived from the vision (see Policies and Strategy). The leadership team must be accessible to the staff and should create coherence between the Vision and each of the other enablers listed below.

It should be a top priority to ensure that senior management is familiar with and has expressed the company's commitment to the business case for sustainability. A sustainability champion should be identified at executive level.

The company with a successful sustainability initiative usually has visionary leadership at executive level. A so called 'sustainability champion' should be the person who identifies business opportunities and inspires others in the company to adapt sustainability measures.

Some of the most innovative initiatives have been shown to come from experts and conceptual leaders in the field of sustainability. The importance of creating partnerships with private consultants and non-profit organizations cannot be over emphasised. It will expand a company's breadth of understanding. Dialogue with local NGOs, UN agencies and foundations helps focus on places where traditional business models do not work.

The Global Compact principles require tough choices:

- How far ahead should one operate of local competition and Government practice?
- How much should one monitor and influence the practices of suppliers and customers?
- How frank should one be about failures in a culture where only success counts?
- How much time should one set aside for the Global Compact versus other job priorities?

**GETTING THERE*****Codes and Standards***

- Translate the three principles into practical language of the company (with examples).
- Draw on the results of the GC Learning Forums
- Refer to the WRI/WBCSD/UNEP's Tomorrow's Markets, available at [http://pubs.wri.org/pubs\\_description.cfm?PubID=3155](http://pubs.wri.org/pubs_description.cfm?PubID=3155)

***Management Tools***

- Apply the Business Case Matrix to show how sustainability factors enhance business successes: [www.sustainability.com](http://www.sustainability.com)
- Apply the Corporate Responsibility Assessment Tool to help the company manage, measure, improve and report on CSR practices. [www.crttool.com](http://www.crttool.com)
- Implement an Environmental Management System, Module 4, Session 2



## Communication and Partnership

- Form a board/top management committee to guide implementation and identify a sustainability champion
- Hold listening and dialogue sessions – make use of Communication Tools (Module 4, Session 2)

### Case studies

- Natura, Brazil– developing a business case ([www.sustainability.com](http://www.sustainability.com))
- Washright Campaign (case study no. 3-9) – demonstrating role of leadership competence in meeting sustainability targets ([www.unilever.com/environmentsociety](http://www.unilever.com/environmentsociety))
- Interface (case study no. 4-1)

## Slide 7 Enablers (2)

### Empowerment

This is about realising the full potential of people in line with the vision. Best practice performance includes:

- Ensuring overall alignment of all people management activities with the vision.
- Care in recruitment, training and career progression.
- Setting individual and team performance targets.
- Appropriate delegation of decision making and resource deployment.
- Sufficient freedom for the initiative and the allowance for mistakes.
- Implementing an appropriate reward system for performance and breakthroughs.

In relation to the Global Compact this means relating principles to tangible choices with adequate information and supporting clear stands on sensitive issues. A direct partnership with the company workforce is fundamental in ensuring the successful application of the principle and the continuous improvement and innovation capacity of the organization.

Education on a company-wide scale allows employees from various sectors to understand their role in the company's sustainability practices. The creation of interdepartmental teams generates employee participation and ideas to reduce waste and save money.

## GETTING THERE



### Management Tools

- Undertake in-house learning sessions, draw on Learning Forums and other executive education, MBA programs and worker/employee training.
- Experiential learning.
- Engagement in community work to build on life experience and develop societal understanding of employees.
- Develop Environmental Performance Indicators (Module 4, Session 2).



## Communication and Partnership

- Internal environmental training and communication (could form part of an Environmental Management System, Module 4, Session 2).
- Employees should work through the self-guided Chronos e-learning tutorial at [www.sdchronos.org](http://www.sdchronos.org)
- Trainers and company managers should utilise the EMS training resource kit (UNEP/ICC/FIDIC) at [www.uneptie.org](http://www.uneptie.org)
- Use the Environmental Management Navigator package of the Wuppertal Institute/UNEP for SMEs at [www.em-navigator.net](http://www.em-navigator.net) to select the most suitable environmental management tool for your company.

### Case studies

- Du Pont (no. 4-4)
- Bovince Ltd (no. 4-5)

## Slide 8 Enablers (3)

### Policies and strategies

Leadership and empowerment is best consolidated and structured by:

- A formal set of objectives.
- Policies that determine in advance the desired and prohibited practices and activities.
- Plans that articulate for every part of the organization the activities, the objectives and resources with deadlines and responsibilities.
- Effective communication with employees, business partners, shareholders and stakeholders.

A statement articulating a company's sustainability goals is necessary to provide a foundation on which to build a program of initiatives. Most companies' visions or policy statements are characterised by a formal set of objectives that articulate the company's culture or specific ambitions. The three environmental principles will need to be translated into the practical language of the company with examples, each of which will enrich the company vision.

Using tools such as life cycle assessments, resource flow audits and environmental reviews, the key areas for change should be identified. Priorities based on level of impact and environmental threat should be identified, and the business advantage of each possible change should be considered. All staff and external stakeholders (including suppliers and other interested parties) should be involved as far as possible in this process.

The policy should include a clear description of objectives, targets and actions to reach them with the people and departments involved. A budget should be allocated to each action, with times and deadlines identified. Capacity and training needs should be identified and a system by which to review and assess the plan's application outlined.

Targets should be set with the aim of measuring progress toward sustainability – these might

include specific goals for reductions in emissions, waste and energy use, or benchmarks for gauging company impact on disadvantaged regions or social groups and/or sensitive ecological areas. These targets and objectives should be “SMART”

- Specific – in terms of the aspect of work to which they relate
- Measurable – in terms of quantity and quality
- Achievable – within work constraints
- Relevant – to the aims and objectives of the company
- Time constrained

## GETTING THERE



### *Codes and Standards*

- Use the International Declaration on Cleaner Production for guidance on how to implement CP in the company at [www.uneptie.org/cp/declaration](http://www.uneptie.org/cp/declaration)
- Refer to the Corporate Social Responsibility: A Guide to Better Business Practices, BSR, 2001 at [www.bsr.org](http://www.bsr.org)
- Refer to the Corporate Responsibility Code Book, Deborah Leipziger, 2003 at [www.greenleaf-publishing.com/catalogue/codebook.htm](http://www.greenleaf-publishing.com/catalogue/codebook.htm)



### *Management Tools*

- Use Environmental Assessment and Auditing Tools to assess needs and priorities (Module 4, Session 2)
- Select an Environmental Management Strategy (Module 4, Session 2)
- Life Cycle Management
- Resource flow audits
- Environmental reviews



### *Communication and Partnership*

- Forge partnerships with scientific/research groups, environmental groups, suppliers
- Make use of Communication Tools (Module 4, Session 2)

#### Case studies

- Du Pont (no. 4-4)
- Bovince Ltd (no. 4-5)

## Slide 9 Enablers (4)

*The allocation of resources (time, knowledge, technology, money)*

This is about the management of the means to implement the strategy and equip the employees with what they need to achieve their targets. Here we consider:

- The efficient allocation of financial resources
- The management of material assets

- The management of technologies
- The management of information and knowledge

Some would argue that the Global Compact principles tend to relate mainly to the category of resources that are “intangible” like brand reputation, community relations, potential liabilities. They have nevertheless a large impact on total shareholder value. It is therefore important to understand how the appropriate strategy and allocation of resources create value from the integration of the Global Compact principles. Once one goes into the practical implementation of the principles their direct material or tangible value becomes evident.

## GETTING THERE



### *Codes and Standards*

- Integrated Environmental and Economic Accounting: An Operational Manual, UNEP, 2000.  
<http://unstats.un.org>
- Contemporary Environmental Accounting: S Schaltegger and R Burrit, 2000.  
<http://www.greenleaf-publishing.com/>



### *Management Tools*

- Test budgets against policies/action plans
- Assign responsibilities to executive management (Part of Environmental Management System, Module 4-Session 2)
- Make use of Environmental Assessment Tools such as Environmental Risk Assessment and Environmental Technology Assessment (Module 4, Session 2)



### *Communication and Partnership*

- Use the SIGMA projects accounting tool ([www.projectsigma.com](http://www.projectsigma.com))
- Use the CARE tool to help reduce costs and improve environmental performance ([www.wupperinst.org](http://www.wupperinst.org))
- Undertake risk and opportunity assessment

#### **Case studies**

- Wessex Water Services Ltd. – used the Sigma Project Accounting Tool to develop its sustainability accounts ([www.wessexwater.co.uk](http://www.wessexwater.co.uk))
- Muckenhaupt and Nusselt – participated in the CARE project in order to develop an EMS ([www.munu-kabel.de](http://www.munu-kabel.de))

## Slide 10 | Enablers (5)

### *Innovation and processes*

Continuous improvement is about:

- Understanding the key processes that create improvements
- The process of target setting and communication throughout the organization and particularly
- The process of innovation

Innovation thrives in organizations that foster system thinking and contacts and dialogue beyond the usual boundaries of business. The Global Compact principles create dilemmas for business and are therefore a source of innovative solutions that open new markets and strengthen competitive advantage.

Look at how you can link sustainability to the company's core values - such as quality, innovation, or time to market. Reducing the amount of material used in a product while maintaining or improving overall product quality provides greater value to customers while preserving resources. Another method is to sell *services in addition to products*. Establish eco-efficiency as a prominent target and evaluation screen in your innovation process.

Analyzing and understanding a product's life cycle (from design, production, distribution, end-use and ultimate disposal or recyclability) is the only way to identify the opportunities to reduce material and resource costs. As the life cycle of a product is considered, companies can begin to understand the environmental, economic and social impacts of their products and move toward a more sustainable practice. Pay attention to places where you may be vulnerable because of impacts on ecosystems.

The use of the following tools and processes should be formalised through an environmental management system (EMS) approach such as ISO 14001. It is here that the company could begin to conduct regular and transparent environmental audits and impact assessments, to refocus research and development towards environmentally sound technologies (ESTs), use life cycle assessment (LCA) in the development of new technologies and products, co-operate with industry partners to disseminate "best available technologies" and explore opportunities for more environmentally benign inputs and outputs in product development.

## GETTING THERE



### **Management Tools**

- ISO 14000 Environmental Management System [www.iso.org](http://www.iso.org) (Module 4, Session 2)
- SAFE: Sustainability Assessment for Small and Medium-sized Enterprises: <http://www.wupperinst.org/safe/>
- Environmental Assessment Tools (Module 4, Session 2):
  - Cleaner Production assessment
  - Product stewardship activities
  - Environmental Impact Assessment and Risk Assessment
  - Life-Cycle Assessment
  - Design for Environment and Eco-design
  - Environmental Auditing

- Sustainable Production and Consumption
- Product-services systems

#### Case studies

- Toyota-Global (no. 3-11)
- Re-Define (no. 3-15)
- Nokia (no. 3-14) – product life-cycle analysis
- Moroccan dyeing industry – eco-efficiency analysis for each product's life cycle ([www.unido.org](http://www.unido.org))

## Slide 11 Results (1)

### *Influencing or satisfying commercial partners – Impact on Value Chain*

Cooperation and transactions with customers and suppliers provide a company with its financial added value. This is where it also confronts its competition.

At some stage the implementation of the Global Compact principles will involve suppliers and customers. Companies with high credentials and performance in their own operations have been accused of tolerating their suppliers' or distributors' poorer standards. There are potential conflicts between the traditional results of customer satisfaction and an interference regarding their environmental, labour and human rights practices. There are also many opportunities for alliances because there are precisely very few things a company can move alone. A fine balance between satisfying the needs of commercial partners and influencing their practices as an advocate for the Global Compact will be a critical test of real commitment in the eyes of most employees and many observers.

Many leadership companies work with their suppliers on design for environment projects and other initiatives to reduce environmental impacts. Some companies try to involve customers, analyzing their needs to eliminate waste or develop systems to take back and recycle used products. It is useful to test key technologies and markets against changing trends in societal acceptance. Start a campaign that brings eco-efficiency ideas and tangible savings to customers and suppliers. Form a stakeholder advisory panel in the communities around your primary operations to focus on your main products or markets. Understand how suppliers are performing on an eco-efficiency basis and create programs to improve performance and share rewards.

## GETTING THERE



### *Codes and Standards*

- Sector wide codes of practices
- See examples on UNEPTIE website, especially Catalysing Change: How industry associations can promote sustainable development.
  - <http://www.uneptie.org/outreach/business/docs/catalogue+foreword.pdf>
  - [http://www.uneptie.org/outreach/wssd/contributions/sector\\_reports/reports.htm](http://www.uneptie.org/outreach/wssd/contributions/sector_reports/reports.htm) for the WSSD Industry Sector reports.



### **Management Tools**

- Environmental Monitoring and Auditing Tools (Module 4, Session 2). E.g. Supplier and customer audits
- Environmental Management Tools (Module 4, Session 2) E.g. Product life cycle stewardship and Supply chain management standards



### **Communication and Partnership**

- Environmental Communication Tools (Module 4, Session 2) (e.g. Product labelling – e.g. Eco-labels)
- Form a stakeholder advisory panel

#### **Case studies**

- British Telecom (case study no. 3-2) – CSR and customer satisfaction  
[www.bt.com/betterworld](http://www.bt.com/betterworld)

## **Slide 12 Results (2)**

### **People satisfaction**

This measures impact on employee satisfaction and morale. Many companies have noted that their commitment to principles beyond profit has a positive impact on recruitment and retention of talented employees.

Some of the tough choices made by the leadership about high environmental standards and zero tolerance of unfair and unethical practices will affect employees in the regions where governments and competitors ignore compliance with the Global Compact principles. This will require special attention and support.

Employees are one of the most important assets of a company, and the two enjoy a mutually beneficial relationship. Employees have many rights that, when respected, lay the foundation for job satisfaction and high performance. The rights related to health and safety are closely related to the environmental performance of a company. Improving the environmental performance of a company can improve the working conditions and also the workers morale. Another aspect that contributes to higher employee satisfaction and performance levels is employee participation. One of the key success factors of an environmental management system is the participation of employees in identifying risks and opportunities as well as in implementing changes and especially in reward systems for meeting performance targets.

## **GETTING THERE**



### **Communication and Partnership**

- Dialogue and listening sessions (Internal Training and Communication – could form part of EMS, Module 4, Session 2)

- Employee surveys and reward schemes for meeting environmental performance targets

### Slide 13 Results (3)

#### *Impact on society*

This measures the perception of the company's performance by relevant external stakeholders, including, for example:

- Investors
- Regulatory agencies
- Employees
- Local communities where the company operates
- Human rights, labour, and environmental organizations
- Business networks
- Rating agencies; financial analysts
- Suppliers and customers

## GETTING THERE



### *Communication and Partnership*

- Site community opinion surveys
- Local and corporate advisory panels
- ETHOS Indicators on Corporate Social Responsibility [www.ethos.org.br](http://www.ethos.org.br)



### *Management Tools*

- Environmental Management Tools (e.g. Product Stewardship, Extended Producer Responsibility, Module 4, Session 2)
- UNEP APELL (Module 4, Session 2) <http://www.uneptie.org/pc/apell/>
- Stakeholder Engagement Manual (UNEP, AccountAbility, Stakeholder Research Associates) <http://www.unep.fr/outreach/home.htm>

#### **Case studies**

- Petrobras, Brazil – implementation of APELL

### Slide 14 Reporting

The continuous improvement cycle does not work without a set of specific measurements that reflect actual performance. The measurements also need to be relevant to all actors concerned by the performance.

The performance needs:

- To be compared to the targets set for the period

- To be compared to those of competitors and, amongst them, the best-in-class
- To include parameters that measure the improvements of processes, not only outputs

Progress against objectives derived from the Global Compact principles adds a social and environmental ledger to the financial results. This provides an augmented perspective of how the company makes a positive contribution to the society in which it operates. Yet the core contribution will remain consistent, improving creation of wealth for all its employees, owners, associates and the economy at large. Social and environmental excellence enhances shareholder value only as long as the company generates an economic profit.

Publicise the results of your sustainability efforts. Consider publishing an annual sustainability report. In doing this, introduce your company to the GRI guidelines for sustainability reporting, where you will find a suggested framework, reporting principles, sustainability indicators and so on. Make clear to senior management that reporting is a key communication tool and an essential part of the quality management cycle. Communicating progress is also a key annual requirement in the Global Compact. Be sure to highlight environmental and social gains achieved by the business to all stakeholders, particularly those in the local communities. Share best practices with the broader business community. Promote a wider awareness of sustainability issues and the practices that can help businesses move toward sustainability.

## GETTING THERE



### *Codes and Standards*

- Manual on eco-efficiency indicators [www.unctad.org](http://www.unctad.org)
- AccountAbility 1000 (AA1000) Framework [www.accountability.org.uk](http://www.accountability.org.uk)
- Efficient Entrepreneur Calendar [www.uneptie.org/outreach/business/calendar.htm](http://www.uneptie.org/outreach/business/calendar.htm)



### *Communication and Partnership*

- Environmental Reporting and Communication Tools (Module 4, Session 2) including, for example, the Global Reporting Initiative [www.globalreporting.org](http://www.globalreporting.org)
- “High 5! GRI Reporting Handbook for SMEs” (2004) [www.globalreporting.org](http://www.globalreporting.org)

#### Case studies

- Vancity – use of AccountAbility 1000 (AA1000) Framework ([www.vancity.com](http://www.vancity.com))

## Slide 15 The Global Compact's engagement opportunities

The Global Compact offers many engagement opportunities, namely:

- Policy dialogue
- Learning
- Local Networks
- Partnership Projects

The Global Compact Learning Forums seek to contribute to a better understanding of global responsible corporate citizenship by bringing stakeholders together to share good practices and to identify and fill knowledge gaps. They aim to contribute to knowledge and tool development, as well as training and dissemination on priority issues related to the Global Compact. The Forums support efforts to increase transparency of corporate actions through the publication of relevant public corporate reports on the Global Compact Learning website. They offer a range of engagement mechanisms to assist different stakeholders in the implementation of these goals and objectives.

### Slides 16-17 The UNGC Learning Forums

The following mechanisms exist:

- **Examples of corporate experiences in implementing the ten principles:** This includes descriptions of company experiences, with links to respective websites for further documentation, reports (annual reports, sustainability reports) and a personal contact to facilitate networking between interested parties.
- **Case studies of corporate experiences:** This includes independent and in-depth analyses and descriptions of specific company activities related to the integration of one or more of the ten principles. The case studies follow the Global Compact Research guidelines that facilitate comparative analysis and eventually aggregation of knowledge and implications.
- **Description of partnership projects:** Specific partnership projects implemented by a company and related to the ten principles and/or the United Nations Millennium goals will be described. These three mechanisms are open to comments of both Global Compact stakeholders and the general public, aiming to contribute to a better understanding of “good practice” through social vetting.
- **Research matching database:** The Global Compact invites all companies to describe their research interests in a web-based database. This will help to connect companies with participating universities and business schools that have expressed strong interest to contribute to the development of case studies and other action research related to the integration of the ten principles.
- **Learning Forums publications:** The Global Compact invites academics and researchers to present research papers on specific Global Compact issues and research questions that are published in Global Compact Learning Forums publications.
- **Tools development:** The Learning Forums invites all tool providers to join efforts and contribute to the development of tools that enable companies to integrate the ten principles into their core business. The Learning Forums will focus on the development of tools related to the Global Compact Performance Model. Then you will need to draw on the Global Compact Learning Forums and case studies collection.

### Exercise 4.1 – Understanding stakeholder interests

**Divide the delegates into groups of about 10 (if possible from the same company, or similar industries). Provide the delegates with a specific company and a potential scenario relating to a specific environmental decision that they will have to take. Ideally the company and scenario should have a close bearing on the nature of the activities and decisions that the delegates are currently involved in.**

**Ask each group to compile a list of stakeholders that they consider have an interest in the development of the company's environmental performance. These groups should then divide into even smaller groups representing these different stakeholders, with one group/individual playing the role of the company.**

**Each group should then:**

- **Brainstorm the general interests and values of their stakeholder group**
- **Brainstorm the changes that their particular stakeholder group would like to see to the company's policy and activities**
- **Develop a possible negotiating strategy aimed at achieving these changes**

**Groups should bear in mind the likely strategy of other groups, and should consider whether it would be advantageous to seek alliance with one or more of the other groups. Each group will make a final presentation of their view point, after which general discussion will be held.**

Once the groups have been set up, encourage delegates to consider the following questions:

- Identify the most key interests of each particular stakeholder group – and be prepared to strongly defend and maintain that interest.
- To what extent is stakeholder consultation likely to allow interested parties to make meaningful contribution to corporate environmental policy making?
- Are some interested parties more likely to be effective than others? If so, why?

## MODULE 4: FROM PRINCIPLE TO PRACTICE

### Session 2: The Global Compact Toolkit – Environmental Principles

**TIME:** Variable, depending on level of group

#### OBJECTIVES:

The objectives of this session are:

- To unpack the 'GC toolkit' for the Environmental Principles and consider some of the more prominent tools and management approaches.
- To indicate when to use the tool being described.
- To provide examples through case studies.
- Provide the delegates with useful references.

#### SUGGESTED PROCEDURE:

The day before this session is scheduled, encourage delegates to read several of the following:

- Case Study 4-1: Interface
- Case Study 4-2: Deloitte Touche Tohmatsu (Global)
- Case Study 4-3: Sonae (Thailand)
- Case Study 4-4: DuPont
- Case Study 4-5: Bovince Ltd
- Case Study 4-6: Kalundborg, Denmark
- Case study 4-7: Hitega – Chile
- Case study 4-8: IBM's recycled-resin personal computer
- Case Study 4-9: Elk Falls pulp mill, Columbia
- Case study 4-10: BHP Biliton
- Case study 4-11: RMC
- Case-study 4-12: Cardboard Packages, Thailand

NOTE: *all case studies are included separately in the accompanying Delegates' Manual. When reading these case studies, delegates should identify and keep a note of:*

- *The key lessons / messages from the case study.*
- *Their thoughts on the relevance of the case study for their company.*

### Speaker's Notes

#### Slide 1 Title slide

#### Slide 2 The GC Toolkit – Environmental principles

The GC Toolkit is a range of concrete instruments aiding implementation of the GC Performance Model outlined in Session 1. The range of tools and codes of practice have been developed over the last ten years by business, government and civil society.

In essence, the GC toolkit has the following essential functions:

- Provides a methodology for collecting and organising information
- Improves knowledge and understanding of the dynamics of the system, the drivers of behaviour and the reasons for failure
- Provides a description of accepted levels of performance and/or prompts the setting of performance targets
- Identifies proven means for modifying behaviour to reach these performance targets
- Provides the means for monitoring and reporting on progress in improving performance

Some managers intuitively 'see' the challenge and the correct solution without the conscious help of tools, which they may reject as being too cumbersome. However, when it comes to sharing knowledge and learning new skills, particularly at a distance and through published material, tools work best.

Tools are presented not only to be used but also to be adapted and combined with others to reach new levels of performance. The toolbox associated with the Global Compact performance model will continue to grow as companies share and standardise their approaches to implementation.

### Slide 3 Different types of GC Tools for the Environmental Principles

For the purposes of this course, the 'GC toolkit' for the Environmental Principles has been divided into four key compartments, namely:

- Management Tools
- Assessment Tools
- Monitoring and Auditing Tools
- Reporting and Communication Tools

This is consistent with the organisation of the tools for Environmental Responsibility in Module 3: Session 2. However, it must be noted that the tools are applicable to implementing all three of the Environmental Principles into core business practice. In Module 3 Principle 7, it was shown that the Precautionary Principle can be integrated into business by using one or more of the tools (i.e. CP, LCA, EIA etc.) and, similarly, in the session on Principle 9 it was shown that incorporating Environmentally Sound Technologies can be supported by using various assessment tools such as CP, EnTAs, EIAs, etc.

#### NOTE TO TRAINERS

*In the following section, you will describe each of the tools in each of these four compartments. Make the point that this is by no means a comprehensive overview of all the available tools. Where possible, you will illustrate each tool's use by means of a case study, or provide the delegates with references or websites for further reading.*

*In this session you will provide an overview of each of the main types of policy tools in the four broad categories listed above, before examining each of these tools in more detail later in the presentation.*

*This session is an introduction to the tools only, the application of each tool requires further work by the participants themselves, and additional guidance for this is provided in Module 4, Session 3 and Module 5.*

*In addition you should also make use of the detailed Framework for Action that is provided in Appendix 1 (of both Manuals). This is intended to provide a valuable guide for selecting and applying the various tools.*

#### **Slide 4** The response of a hypothetical company: What tools and when?

It may be useful to consider how a hypothetical company would look at the different kinds of tools it should adopt, and the timing thereof. Point out that the various case studies in the delegates' manual indicate the benefits to many companies of using these tools to identify opportunities for improved environmental responsibility.

The company could first decide to manage its environmental risks and opportunities by implementing an Environmental Management System. It could then decide on the strategy of Cleaner Production and undertake a Cleaner Production Opportunity Assessment (CPOA).

This will encompass or lead to one or more of the following:

- Environmental auditing
- Pollution and waste audits
- Supply chain audits and assessments
- Ecological footprinting

It would also provide the company with environmental performance indicators. The result of this will be the identification of options for improved environmental responsibility. These options may require more detailed assessments to assist decision makers on determining their feasibility and long-term sustainability, examples being:

- Design for Environment (DfE)
- Life Cycle Assessment (LCA)
- Eco Efficiency
- Industrial Ecology
- Total Cost Assessments (TCA)
- Environmental Impact Assessment (EIA)
- Environmental Technology Assessment (EnTA).

The results could then be communicated by reporting on the existing ecological footprint/environmental performance indicators together with a report on the identified options for improved environmental responsibility as a result of the decisions made from the information identified by these tools.

The benefits to the company will be to reduce environmentally-related risks and identify opportunities for creative new ideas that save the company money, that open up new markets, that reduce liability, etc.

Similarly, a new business idea can be developed using tools such as DfE, and can be assessed using EIAs, LCAs, EnTAs, TCAs. The new business can be operated according to the strategies of CP/eco-efficiency/industrial ecology.

Once the business is up and running under an Environmental Management System, regular audits can be undertaken to ensure the business remains environmentally responsible and to identify further opportunities for continuous improvement (this may be voluntary or required by law/agreement). The EMS will help tie all the different aspects together by providing a structured approach. The *Framework for Action* in Appendix 1 provides a useful overview of when to use each of the various tools.

### **Slide 5** Environmental Sustainability Tools – Overview

Introduce the following general types of environmental management tool:

- Environmental Management Systems (ISO 14001, EMAS, etc.) – Note that a more detailed review of the key steps in designing and implementing a structured Environmental Management System is provided in slides 13-18 of this module.
- Environmental Management Strategies:
  - Cleaner Production, Eco-efficiency and Sustainable Consumption
  - Life-cycle management
  - Design for the Environment/ Eco-design
  - Cradle-to-Cradle Design
  - Product stewardship activities
  - Product-services systems
  - Industrial ecology
  - UNEP APPEL

### **Slide 6** Relating Environmental Management Tools to the GC Performance Model

This slide indicates how the Environmental Management Tools may be used to support the implementation of the GC Performance Model.

### **Slide 7** Environmental Assessment Tools

Introduce the following five general types of environmental assessment tool

- Environmental Impact Assessment
- Environmental Risk Assessment
- Cleaner Production Opportunity Assessments
- Environmental Technology Assessment
- Life-Cycle Assessment
- Total Cost Assessment

### **Slide 8** Relating Environmental Assessment Tools to the GC Performance Model

This slide indicates how the Environmental Management Tools may be used to support the implementation of the GC Performance Model.

### Slide 9 Environmental Monitoring and Auditing Tools

Introduce the following general types of environmental monitoring tools

- Environmental Performance Indicators
- Environmental Auditing
- Pollution and Waste Audits
- Supply Chain Audits and Assessments
- Ecological Footprint

### Slide 10 Relating Environmental Monitoring and Auditing Tools to the GC Performance Model

This slide indicates how the Environmental Management Tools may be used to support the implementation of the GC Performance Model.

### Slide 11 Environmental Reporting and Communication Tools

Introduce the following general types of environmental reporting and communication tools

- Corporate Environmental / Sustainability Reports
- Stakeholder Engagement Activities
- Developing Partnerships for Progress
- Environmental Labelling/Product Declaration Programmes

### Slide 12 Relating Reporting and Communication Tools to the GC Performance Model

This slide indicates how the Environmental Management Tools may be used to support the implementation of the GC Performance Model.

### Slide 13 Management tool: Environmental Management Systems (EMS)

An Environmental Management System (EMS) is the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an environmental policy. An EMS is seen as an effective tool to reduce and control the negative effects of human activity on the environment.

An EMS may be used to:

- Help companies to identify and prioritise their key environmental impacts in a structured and systematic manner.
- Provide a framework for setting clear objectives and targets for managing these impacts.
- Ensure that structured processes and procedures are in place for measuring and monitoring performance.

The type of EMS depends largely on the nature, size and complexity of the company's activities, products and services. The following basic elements apply:

- An environmental policy is usually published as a written statement expressing the commitment of the company to a set of objectives.
- An environmental programme or action plan details the measure the company will take.
- Organisational structures are defined.
- Environmental management is integrated into the business operations.
- Monitoring, measurement and record keeping procedures are set up.
- Corrective and preventative action is defined.
- EMS audits are carried out.
- Management reviews are carried out.
- Internal training and external communication components are adopted.

Many companies and their interested parties have encountered the need for more clarity on the details of EMS and auditing/assessment concepts, and at the same time the need emerged for a level playing field in relation to these aspects. Activities on standardisation and certification have therefore started at both national and international level. Standards for EMS have been developed by the International Organisation for Standardisation (e.g. ISO14000), and standard developments at national and European level are affecting industry worldwide, the main developments being the recognition of the British Standard for EMS (BS 7750) in many countries and the implementation of the Eco Management and Audit Scheme (EMAS) in the European Union. These generally follow a similar process for the EMS as outlined in the following slides on ISO14000.

### **Slides 14-18 The basic elements on an EMS**

These slides run through the various sets of activities in each of the plan, do, check, act phases that make up a structured Environmental Management System.

An EMS follows the well-known quality management approach of “Plan, Do, Check, Improve.” It is a problem identification and problem solving tool which can be implemented in an organisation in many different ways, depending on the precise sector of activity and the needs perceived by management. The specific system implemented depends entirely on the needs and objectives of the organisation.

#### ***Plan***

- Identify aspects and impacts, hazards and risks
- Document legislation and other requirements
- Set objectives and measurable targets
- Policy and management programme

#### ***Do***

- Structure and responsibility
- Training, awareness and competence
- Communication
- EMS documentation
- Document control
- Operational control
- Emergency preparedness and response

**Check**

- Monitoring, measuring and auditing performance
- Maintaining records
- Schedule, plan and conduct system audits
- Non-conformance and corrective action

**Act**

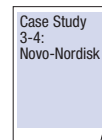
- Implement corrective actions
- Track improvement
- Management review

**Slide 19 EMS: Importance of training and internal communication**

Internal communication is an important element of an EMS but can also be undertaken independently of an EMS. Ongoing employee and management training and internal communication at all levels is critical for ensuring that there is sufficient commitment and understanding to integrating principles of environmental responsibility into the business, and to ensuring that there is a required change in attitudes and business behaviour.

Training and communication should be undertaken on issues such as:

- Awareness of the company's environmental impacts and aspects.
- Technical understanding on how to manage these impacts and aspects.
- Knowledge of current and potential environmental liabilities.
- Skills to effectively implement management systems and programmes.
- Building and maintain motivation to address environmental concerns.



For further information:

- <http://www.uneptie.org/pc/pc/tools/enta.htm>

**Slide 20 Environmental Management Strategy: Cleaner Production**

Case Study 3-13: CP in a Czech Slaughterhouse, and 4-7: Hitega, Chile

Cleaner Production (CP) is a general term that describes a preventive environmental approach, aimed at increasing resource efficiency and reducing the generation of pollution and waste at source, rather than addressing and mitigating the symptoms. CP has been defined as “the continuous application of an integrated preventive environmental strategy to processes, products and services so as to increase efficiency and reduce risks to humans and the environment.”

- Cleaner Production is essentially similar in approach to related concepts such as waste minimisation, pollution prevention and eco-efficiency.

**Slide 21 A Cleaner Production (CP) Strategy**

- For *production processes*, CP includes
  - More efficient use of raw materials, water and energy
  - Elimination of toxic or dangerous process input materials

- Minimising the volume and toxicity of all emissions and waste
- For *products*, CP focuses on
  - Reducing impacts through the products' life cycle
  - Adapting design, raw material input, manufacturing, use, and disposal
- For *services*, CP implies
  - Preventive environmental strategy in the design and delivery of services

CP can be achieved in many different ways, but the most important of these are:

- *Changing attitudes* and finding a new approach to the relationship between industry and the environment.
- *Applying expertise and know-how* by improving efficiency, adopting better management techniques, changing housekeeping practices, and revising policies, procedures and institutions as necessary.
- *Improving technology* or simply rethinking an industrial process or product in terms of CP may produce the required results without importing new technology.

For further information (see also list at the back of the Manual):

- [www.cleanerproduction.com/](http://www.cleanerproduction.com/)
- [www.uneptie.org/pc/cp/](http://www.uneptie.org/pc/cp/)
- <http://es.epa.gov/cooperative/international/>
- <http://www.uneptie.org/pc/pc/tools/cleanerproduction.htm>

## Slide 22 Promoting CP through good management practices

This slide outlines some of the key management activities that can be undertaken with the aim of embedding CP practices throughout the company.

- Establish senior management commitment for CP:
  - Define, communicate and monitor progress against performance targets
- Appoint waste minimisation 'champion' to:
  - Review the true cost of waste
  - Motivate the workforce to reduce waste – appropriate incentives
- Implement visible monitoring and reporting for example on:
  - Volumes of waste generated / materials used
  - The cost of waste collection and disposal, and resource use
  - The total cost of waste and resource use
- Inform the company's suppliers of the company's commitment to CP, and (where appropriate) provide them with technical and other assistance to help them in implementing CP
- Look into the possibility of sharing CP expertise and best practices with company peers, for example by participating in a waste minimisation club

## Slides 23-24 Implementing a CP Management Programme

Cleaner Production is about collecting and processing information and making decisions about minimising emissions and waste. It is essentially the application of familiar analytical, problem solv-

ing and project management techniques for the reduction of waste and the promotion of resource efficiency in process operations.

A structured CP process can be broadly divided into the following steps (these are presented in a diagram in Slide 8, along with a more detailed overview of the various activities associated with each of the following steps):

- Step 1: Planning and Organisation
- Step 2: Preliminary Assessment
- Step 3: Detailed Assessment
- Step 4: Feasibility Analysis
- Step 5: Implementation
- Step 6: Monitoring Progress

A company may implement these steps entirely on its own, or it may hire experts to assist. Depending on the nature of the business, an understanding of fundamental process chemistry and technology may be needed to clarify causes of waste. Obtaining such knowledge may require extensive information gathering and/or consultation with technology experts. In addition, the assessment may also be organised to focus on selected processes rather than the entire operating facility.

When developing a cleaner production programme that is cost-effective, it is useful to remember the following broad principles:

- Keep it simple and appropriate to the circumstances of the company.
- Include provision for simple management issues as well as for process/product changes.
- Only target materials for recycling and re-use when there sufficient local demand.
- Include provision for methods for storing and collecting recycled materials.

## Slide 25 Eco-efficiency

Case Study  
3-12:  
Columbian  
tannery

Eco-efficiency is a management approach which aims to achieve “more with less” by making efficiency improvements within existing processes. It is also about finding innovative approaches to producing more value with less input of energy and material, and with reduced emissions.

Eco-efficiency involves:

- Reducing the material and energy intensity of goods and services
- Increasing the service intensity of goods and services
- Reducing toxic dispersion
- Enhancing material recyclability
- Maximising sustainable use of renewable resources
- Increasing material/product durability
- Increasing service intensity

The four key opportunity areas for business to implement eco-efficiency are as follows:

- *Re-engineering processes*: improving monitoring and management practices, changing

existing technology, amending operating procedures and making changes to raw material inputs.

- *Redesigning products*: facilitating product disassembly, reducing material intensity, and promoting product recyclability and reuse.
- *Re-valourising by-products*: turning waste into a commercially valuable resource for other processes; at its extreme this may form part of a closed-loop process known as “industrial ecology”.
- *Rethinking markets*: meeting customer needs in a less material and energy-intensive manner, for example by providing an equivalent service to replace the product.

Although eco-efficiency is an important component of sustainable development efforts, it is not enough on its own. Not only is the social aspect of sustainability beyond its scope (other than employee health and safety), but for eco-efficiency to lead to absolute reductions in resource use it needs to be accompanied by more efficient consumption.

### Slide 26 Implementing CP and Eco-efficiency – A structured approach

This slide provides an overview of a possible structured approach for embedding CP and eco-efficiency practices within a company. The key steps include: (see also some of the slides in Module 3, Session 2)

- Assigning formal responsibility for CP/eco-efficiency
- Identifying CP opportunities by undertaking a CP opportunity assessment
- Analysing the information
- Considering all of the various options that are available
- Producing an action plan
- Implementing the action plan
- Reviewing progress and making changes as required

### Slide 27 Sustainable Consumption and Production

The growing attention to issues of Sustainable Consumption and Production is a natural outcome of decades of work on Cleaner Production and eco-efficient industrial systems. It represents the final step in a progressive widening of the horizons of pollution prevention; a widening which has gone from a focus on production *processes* (Cleaner Production), to products, (eco-design), then to *product-systems* (incorporating transport logistics, end-of-life collection and component reuse or materials recycling) and to *eco-innovation* (new products and product-systems and enterprises designed as win-win solutions for business and the environment). Action focused on *consumption* has highlighted the need to address the creation of new systems of *production and consumption*, systems that might be truly sustainable, both environmentally and economically.

Preventative approaches to improving production and the performance of products (Cleaner Production, product eco-design, environmental technology, eco-innovation and environmental management) have demonstrated significant environmental gains. Increasing eco-efficiency remains the most optimistic strategy for sustainable production, with strong support from industry. However, there is evidence that GDP is growing at a faster rate than improvements in resource or

energy efficiency – *consumption is outpacing the gains from improvements in production and products*. There is also increasing evidence of rebound effects, in which improvements in efficiency actually become a stimulus for increased consumption.

Sustainable Consumption is concerned about the evidence that many advances made on the supply side are overtaken by increasing consumer demand and unsustainable consumption patterns. The challenge is to persuade consumers not so much to consume less, but to consume differently. The responsibility of the producer to provide product information that enables consumers to make informed choices is only a part of the answer –necessary, but not yet sufficient to cause an effective shift towards sustainability.

### **What is Sustainable Consumption?:**

*“... the use of services and products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as to not jeopardise the needs of future generations.” (UN CSD, 1995)*

*It includes interventions that influence consumption patterns (e.g. product stewardship, product labelling and information and product design)*

*“Consumers are increasingly interested in the world that lies behind the products. They want to know how and where and by whom the products have been produced.”*

*Klaus Toepfer, UNEP Executive Director*

*For further information:*

- *Training on tools for SCP: <http://www.uneptie.org/pc/cp/library/training/cdgpac/cpsc.htm>*
- *For UNEP's recent resource kit on Sustainable Production and Consumption visit [www.uneptie.org/pc/sustain/advertising/events\\_specifics/SCP\\_Resource](http://www.uneptie.org/pc/sustain/advertising/events_specifics/SCP_Resource)*
- *On the Marrakech Process on Sustainable Consumption and Production, see <http://www.un.org/esa/sustdev/sdissues/consumption/Marrakech/conprod10Y.htm>. Report back from regional meetings in this process include: UNEP / European Commission 2005. European Stakeholder Meeting on Sustainable Consumption and Production. Nairobi / Paris / Brussels: UNEP DTIE.*

## **Slide 28 Business Response to Sustainable Consumption**

Business (e.g. through the World Business Council for Sustainable Development (WBCSD) has approached Sustainable Consumption as an extension of eco-efficiency approaches to include:

- *Technological and social innovations to improve quality of life (ESTs, Product-services systems, Green Procurement Strategies, etc.)*
- *Provide and inform consumer choice (Eco-labelling, Green Advertising, etc.)*
- *Improved market conditions through appropriate legislation and regulation (Extended Producer Responsibility, etc.)*
- *Attention to the need to reduce resource consumption in production and products (Eco-design and Design for Environment, Eco-efficiency, CP, ESTs, Product-services systems)*
- *To improve the effectiveness and quality of product use (Eco-design, Product Stewardship, etc.)*

Some of the examples (in parenthesis) are elaborated on as additional tools in this Module.

The 22 Industry Sector Reports that were submitted to the World Summit on Sustainable Development in a process facilitated by UNEP demonstrate awareness and attention to the need to reduce resource consumption in production and products and to provide information to consumers in order to improve the effectiveness and quality of product use. These Sector Reports may be obtained at: [http://www.uneptie.org/outreach/wssd/contributions/sector\\_reports/reports.htm](http://www.uneptie.org/outreach/wssd/contributions/sector_reports/reports.htm) Reducing end-of-life waste (usually through recycling) is also a common feature of *product stewardship* programmes across most industry sectors.

### Slides 29-30 Examples of strategies to improve Resource Productivity in Production and Consumption

These two slides show a production chain schematic with examples of business strategies to improve resource productivity in both production and consumption. The move to Product-Services systems is one of the most effective strategies to improve resource productivity in production and consumption. This is explained in more detail later on in this module. Other options include designing products to minimise the environmental impact in both production and consumption. This is an important element of a Product Stewardship strategy.

### Slide 31 Life Cycle management

*Life Cycle Management* has been developed as an integrated concept for managing the total life cycle of products and services towards more sustainable consumption and production patterns. This implies that everyone in the whole chain of a product's life cycle, from cradle to grave, has a responsibility and a role to play, taking into account all the relevant external environmental effects.

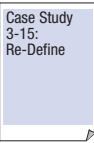
The concept of *life cycle thinking* integrates existing consumption and production strategies, preventing a piece-meal approach. Life cycle approaches avoid problem shifting from one life cycle stage to another, from one geographic area to another and from one environmental medium to another. Human needs should be met by providing functions of products and services, such as food, shelter and mobility, through optimised consumption and production systems that are contained within the capacity of the ecosystem.

By integrating the life cycle perspective in overall management and bringing product and process development in a more sustainable direction, an organisation can harvest the benefits of environmental, occupational health and safety, risk and quality management, as well as developing and applying cleaner process and product options. Incorporating life cycle and sustainability management will improve image and brand value for both world market players as well as smaller suppliers and producers.

*For further information:*

- *Life Cycle Initiative:* <http://www.uneptie.org/pc/sustain/lcinitiative/home.htm>
- *UNEP/SETAC Resources for Life Cycle Assessment and Life Cycle Management:* <http://www.uneptie.org/pc/sustain/lcinitiative/training.htm>

## Slide 32 Management tool: Design for the Environment



Design for the environment (DFE) is an umbrella term used to describe the techniques for incorporating environmental considerations into products and services before they enter the production phase. DFE involves examining a product's entire projected lifecycle and identifying measures that can be taken to minimise the environmental impact of the product throughout that lifecycle.

DFE strategies may identify design measures that can be taken to reduce the environmental impact in each of the following key phases of a product lifecycle:

- *Raw materials*: designing in opportunities for resource conservation and low impact raw material usage.
- *Manufacturing*: providing for measures relating to cleaner production and eco-efficiency during the production phase.
- *Product use*: ensuring provision in the product-use phase for considerations relating, for example, to improved energy and water efficiency, reduced material use, and increased durability.
- *End-of-life*: key design considerations include design for disassembly, product re-use, and design for recycling. Building on engineering concepts like “design for manufacturability” and “design for disassembly,”

Design for Environment takes environmental factors into account at the earliest possible stages of product development and design. Paralleling the trend toward Pollution Prevention, DFE recognises that it is far more economical to design quality *into* a product than to try to tack it on later.

For further information see the Centre for Sustainable Design <http://www.cfsd.org.uk/> and also [http://dfe-sce.nrc-cnrc.gc.ca/home\\_e.html](http://dfe-sce.nrc-cnrc.gc.ca/home_e.html)

## Slide 33 Eco-Design

Eco-design addresses the relation between a product and the environment.

Some common propositions about eco-design include:

- Environmental impacts from products have continued to rise relative to production processes.
- A life-cycle perspective on the environmental impacts of a product captures the whole production-consumption chain.
- Of the (life-cycle) impacts from products, 60% to 80% are determined at the design stage.
- When product-related impacts are made explicit in the design process, there are well-trying design strategies for reducing them.
- A focus on products is a better way to engage business interest and action because it focuses on the products' market vulnerability.

*For further information see:* <http://www.uneptie.org/pc/pc/tools/ecodesign.htm>

### Slide 34 Cradle to Cradle design – A new paradigm

Instead of designing cradle-to-grave products, sent to landfills at the end of their 'life', industry can be transformed by creating products for cradle-to-cradle cycles, whose materials are perpetually circulated in closed loops. Maintaining materials in closed loops maximises material value without damaging ecosystems.

*“Models human industry on natural processes, creating safe and healthy prosperity.”*

In response to widespread environmental degradation, many industries have adopted a strategy known as “eco-efficiency” – minimizing waste, pollution and natural resource depletion. But eco-efficiency is not a strategy for long-term success. It seeks to make the current, destructive system sustainable. Minimizing toxic pollution and the waste of natural resources are not strategies for real change. Designing industrial processes so they do not generate toxic pollution and “waste” in the first place is true change. Long-term prosperity depends not on the efficiency of a fundamentally destructive system, but on the effectiveness of processes designed to be healthy and renewable in the first place.

The industrial framework that dominates our lives now is fairly primitive. It is conceived around a one-way manufacturing flow—what is known as a “cradle to grave” lifecycle. This cradle-to-grave flow relies on brute force (including fossil fuels and large amounts of powerful chemicals). It seeks universal design solutions (“one size fits all”), overwhelming and ignoring natural and cultural diversity. And it produces massive amounts of waste – something that in nature does not exist.

### Slide 35 Cradle-to-Cradle Design – “Environmentally Intelligent”

Case Study 3-17: Climatex, 3-18: Ford

Cradle to Cradle Design is a new strategy for business growth and prosperity that generates ecological, social and economic value. It represents a fundamental conceptual shift away from the current industrial system, not just a damage management strategy.

At a fundamental level, the new paradigm proposes that human design can learn from nature to view materials as nutrients circulating in healthy, safe metabolisms.

Industry must protect and enrich ecosystems—nature’s *biological metabolism*—while also maintaining safe, productive *technical metabolism* for the high-quality use and circulation of mineral, synthetic, and other materials.

Eco-effectiveness seeks to design industrial systems that emulate the healthy abundance of nature. The central design principle of eco-effectiveness is waste equals food.

In addition to its provocative content, *Cradle to Cradle*, is printed on a polymer film instead of paper. While current materials and systems are incomplete, this book’s materials suggest ways ‘technical nutrients’ might be used in the future, cycling safely and prosperously in the ‘technical metabolism’ of plastics recycling.

### Slide 36 Benefits of Cradle-to-Cradle Design

There are a number of important potential benefits associated with cradle-to-cradle design.

- **Design for life-time customers:** Cradle to Cradle Design nurtures a company's relationship with its customers by helping clients design products that can be perpetually recycled and "reincarnated," leased again and again to a customer base. For example, computer companies have begun to institute "trade-in" programs, taking obsolete computers from buyers of new machines. This is currently marketed as a waste management service, alleviating the customer's responsibility for handling potentially dangerous, toxic hardware. Companies design products from the beginning to be safely and completely recycled, deriving the best value from materials over many product life cycles and lease terms. Trade-in or leasing programs then support the company's material needs while creating an opportunity for lifetime relationships with customers.
- **Risk Management:** The Cradle to Cradle Design Protocol implements material and process criteria that avoid many of the risks created by current industrial practices, moving far beyond simple regulatory compliance. Risks to environmental and human health are reduced by eliminating the concept of waste—toxic or otherwise—and selecting materials that are safe to both human and natural systems. As public scrutiny and class action lawsuits increase, designing such risks out of products has large payback potential for more and more industries and companies. For example, by designing Climatex Lifecycle fabrics to be completely free of toxins or other harmful substances, Rohner Textil has greatly reduced their risk of accidents and lawsuits. More importantly, they have improved relations with their employees, consumers and the public as a whole.
- **Cost Reduction:** Cradle to Cradle Design aims to eliminate the need for regulations or dangerous materials management. By implementing intelligent design strategies and criteria, companies can dramatically reduce legal and other costs, strengthening their bottom line. Designing for cradle-to-cradle product life cycles also reduces reliance on virgin material inputs, lessening overall material costs.
- **Product Differentiation:** Cradle to Cradle Design is fundamentally different from other approaches to sustainability. Instead of pushing a guilt-driven agenda of minimizing damage to the environment, companies celebrate abundance. Companies design high quality products and services that are safe, healthy, and ecologically sound. As a result, companies offer their customers excellence by all measurements.

For further information: <http://www.mbdc.com/index.htm>

### Slide 37 Product Services Systems

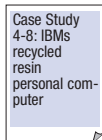
PS systems describes developing a marketable mix of products and services that are jointly capable of fulfilling a client's need – with less environmental impact. The increasing number of service industries, illustrated by expanding information technologies, for example, is one very visible indicator of changes underway.

Product Service Systems (PSS) is a new concept for business to improve its sustainability performance. The approach analyses the needs of consumers that are fulfilled by certain products and services, and uses this as a basis for innovation. As a natural next step after efforts such as cleaning up production processes and re-designing products, the new approach invites business to shift its focus from selling products to selling the utility. A mix of products and services can thereby fulfil the same client demands with less environmental and social impacts.

For further information:

- *Product Service Systems*: <http://www.uneptie.org/pc/sustain/design/pss.htm>
- *Product-Service Systems and Sustainability: Opportunities for sustainable solutions*, (PDF, 512KB)
- *The Role of Product Service Systems in a Sustainable Society* (PDF, 121 KB)

## Slides 38-40 Product Stewardship



Product stewardship is where all parties involved in the production, selling or use of a product take responsibility for the full environmental and economic impacts that result from the production, use and disposal of that product. There are several related terms such as *shared responsibility*, *extended producer responsibility* and *manufacturer responsibility*.

Most companies that have adopted a product stewardship approach have found that it makes good business sense. It offers green marketing opportunities, avoids regulation and can achieve environmental goals. More often than not, companies find that they are able to save money on raw materials.

### The 'tools' of product stewardship include:

- **Take-back programs.** A growing trend is the development of take-back programs in which a manufacturer accepts their product back at the end of the product's life. Xerox, among others, have made take-back an essential part of their business operations.
- **Leasing.** Another tool of product stewardship is leasing or selling a service rather than a product. Under a leasing system, actual ownership of the product remains with the manufacturer. Customers pay for the use and maintenance of a product. At the end of the product's useful life, the manufacturer is responsible for disposal. Several companies are recognizing the benefits of leasing, including Interface, a manufacturer of carpet tiles, and several computer manufacturers like Dell and Gateway.
- **Life-cycle management.** Life-cycle management is a comprehensive examination of the environmental impacts of a product. IBM's new personal computer, which contains recycled content plastic, is an example of a life-cycle management decision resulting in an environmentally preferable product.

The stakeholders typically include manufacturers, retailers, consumers and government officials. The product stewardship approach provides incentives to manufacturers to consider the entire life-cycle impacts of a product and its packaging - energy and materials consumption, air and water emissions, the amount of toxics in the product, worker safety and waste disposal - in product design, and to take increasing responsibility for the end-of-life management of the products they produce.

The objective of product stewardship is to encourage manufacturers to redesign products with fewer toxics, and to make them more durable, reusable, and recyclable, and with recycled materials. Since waste disposal impacts and associated costs have been the basis for engaging manufacturers, attention has initially focused on waste management problems and solutions. However,

the challenge of product stewardship is to move beyond disposal to facilitate a paradigm shift toward “zero waste” and “sustainable production.”

The economic prosperity of the last 10 years has increased average per capita income, but it has also dramatically increased the amount of waste sent to landfills, incinerators and wastewater treatment plants. It has also increased the amount of waste recycled. Increased waste means increased recycling and disposal costs. Costs are further escalated by the need to keep a growing number of toxic products out of solid waste disposal facilities. The costs of managing the recyclables and toxic waste have become a financial burden for local communities, and local agencies have turned back to national governments for assistance. State agencies are now turning to product manufacturers, retailers and other potential industry partners to become part of the solution and to alleviate the burden created by what many local governments are calling an “unfunded industry mandate.”

*For further information:*

- *The Product Stewardship Institute – [www.productstewardshipinstitute.org/](http://www.productstewardshipinstitute.org/)*
- *The National Recycling Coalition’s Electronics Recycling Initiative [www.nrc-recycle.org/resources/electronics/index.htm](http://www.nrc-recycle.org/resources/electronics/index.htm)*

## Slides 41-42 Industrial ecology

Case Study:  
4-6,  
Kalundborg,  
Denmark

Industrial ecology aims to mimic natural ecosystems in industry. It looks at promoting the symbiotic co-location of industries so that waste from one industry can serve as a raw material input into another. It involves tracking energy and material flows through a particular industrial system and identifying opportunities for symbiotic relationships with the aim of minimising the generation of waste.

Industrial ecology is an interdisciplinary framework for designing and operating industrial systems as living systems interdependent with natural systems. It seeks to balance environmental and economic performance within emerging understanding of local and global ecological constraints. Some of its developers have called it “the science of sustainability”.

IE supports coordination of design over the life cycle of products and processes. It enables creation of short-term innovations with awareness of their long-term impacts. It helps design local solutions that contribute to global solutions.

Industrial ecology helps companies become more competitive by improving their environmental performance and strategic planning. IE helps communities develop and maintain a sound industrial base and infrastructure without sacrificing the quality of their environments. And it helps government agencies design policies and regulations that improve environmental protection while building business competitiveness.

While much of the initial work in IE has focused on manufacturing, a full definition of *industrial systems* includes service, agricultural, manufacturing, military and other public operations, as well as infrastructure such as landfills, water and sewage systems, and transportation systems.

Industrial ecology encompasses a variety of related areas of research and practice, including:

- Material and energy flow studies (“industrial metabolism”)
- Dematerialization and decarbonization
- Technological change and the environment
- Life-cycle planning, design and assessment
- Design for the environment (“eco-design”)
- Extended producer responsibility (“product stewardship”)
- Eco-industrial parks (“industrial symbiosis”)
- Product-oriented environmental policy
- Eco-efficiency

*Further information:*

- *International Society for Industrial Ecology* [www.is4ie.org/](http://www.is4ie.org/)
- *Journal of Industrial Ecology* [www.yale.edu/jie/](http://www.yale.edu/jie/)
- *Zero Emissions Research and Initiatives* [www.zeri.org/](http://www.zeri.org/)

### Slide 43 UNEP APELL

The Awareness and Preparedness for Emergencies at Local Level (APELL) process is a managerial tool to build a multi-stakeholder group that subsequently develops a contingency plan ahead of any foreseeable industry-related disaster. This plan means that damage from a potential disaster is reduced. Indirectly, such a plan also results in risk-reduction measures being taken. If an accident does occur, the response actions are already defined in the contingency plan.

The APELL Programme was developed by UNEP and partner organisations in 1988 as a way of raising awareness of local communities surrounded by industrial zones to potential risks to which they are exposed. The initiative came as a response to major accidents in the early 1980s, specifically in Mexico City and Bhopal.

APELL is:

- A modular, flexible methodological tool for preventing accidents
- Failing this, to minimise their impacts

This is achieved by assisting decision-makers and technical personnel to:

- Increase community awareness
- Prepare co-ordinated response plans involving industry, government, and the local community in the event that unexpected events should endanger life, property or the environment.

APELL was originally developed to cover risks arising from fixed installations, but it has also been adapted for specific applications:

- *APELL For Port Areas* was released in 1996
- *TransAPELL: Guidance for Dangerous Goods Transport: Emergency Planning in a Local Community* was published in 2000
- *APELL for Mining* was released in 2001

The APELL Programme is directly supported by the International Council of Chemical Associations (ICCA), also representing numerous national associations. Special agreements have also been signed and joint projects undertaken with: the International Atomic Energy Agency (IAEA), the International Programme on Chemical Safety (IPCS), the World Health Organization (WHO), the UN Centre for Human Settlements (HABITAT), the United Nations Industrial Development Organization (UNIDO), the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the International Labour Organization (ILO), and the International Maritime Organization (IMO).

The APELL Handbook (available at <http://www.uneptie.org/pc/apell/home>), launched in 1988, sets out a ten-step process for the development of an integrated and functional emergency response plan involving local communities, governments, emergency responders and others. This process creates awareness of hazards in communities close to industrial facilities, encourages risk reduction and mitigation, and develops preparedness for emergency response.

Communication is often between the three main groups of stakeholders - company, community and local authorities. Discussion on hazards usually leads to the identification of risk reduction measures, thus making the area safer than before. Structured communication between emergency response bodies (public and company) results in a better-organised overall emergency response effort.

None of the elements of APELL is radical or new. The programme simply provides a common-sense approach to accident prevention and response. APELL can apply to any risk situation, whether industrial or natural. It can be initiated by any party, although companies are expected to take the lead. It can be facilitated by governments, or by industry associations. APELL can be applied in developed and developing countries and in remote or urban areas.

#### Slide 44 Benefits of APELL

APELL can be useful in any situation that requires joint planning by several parties to develop integrated and well understood response plans ready to be implemented should an accident occur.

The APELL process should bring benefits in at least three ways:

- In reducing the likelihood of accidents and reducing their impacts. Even if risks are believed to be low, the consequences to a company of a major accident can be severe in physical, financial and reputational terms. APELL can help protect the company as well as the community.
- In helping to build relationships between a company and the community which will be of benefit over the long term. Companies are becoming more transparent, proactive and responsive in their relationships with stakeholders. Emergency preparedness planning requires effective communication between all parties, which helps to build relationships based on common interest.
- In assisting community awareness and understanding of the operation and its management which should generate the confidence, trust and support which companies need whether or not they experience an accident. These will be severely tested if there is a major accident, but if trust exists, the company will be better placed to communicate effectively in the case of an emergency as well as to recover more quickly from one.

*Further information*

- <http://www.uneptie.org/pc/apell/home.html>

## **Slides 45-46** Environmental Assessment Tools: Environmental Impact Assessment

As a planning tool, an Environmental Impact Assessment (EIA) is regarded as an integral component of sound decision making. It has both information gathering and decision making components which provides the decision maker with an objective basis to either grant or deny approval for a proposed development.

### **Key elements of an EIA are:**

- Scoping: identify key issues and concerns of interested parties
- Screening: decide whether an in-depth EIA is required based on initial information collected
- Identifying and evaluating alternatives: list alternative sites and techniques and the impacts of each
- Mitigating measures dealing with uncertainty: review proposed action to prevent or minimise the potential adverse effects of the project
- Issuing environmental statements: report the findings of the EIA

The initiator is usually the applicant for regulatory approval. For further information:

[www.unep.ch/etu/publications/EIAMan\\_2edition\\_toc.htm](http://www.unep.ch/etu/publications/EIAMan_2edition_toc.htm)

Environmental Impact Assessment (EIA) is used to identify the environmental and social impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. By using EIA both environmental and economic benefits can be achieved, such as reduced cost and time of project implementation and design, avoided treatment/clean-up costs and impacts of laws and regulations.

UNEP promotes the appropriate application of the EIA process to major projects, and supports practitioners, clients and review agencies through the publication of guidance documents. A recent review of the EIA process recommended that it should consider, and be used during, the entire project cycle from planning through operation to eventual closure. EIA should also be closely integrated with the environmental management systems now used by major companies.

## **Slides 47-48** Assessment tool: Environmental Risk Assessment (ERA)

ERA typically consists of Human Health Risk Assessment and Ecological Risk Assessment. As a tool, Environmental Risk Assessment:

- Describes a hazard (whether a chemical pollutant detrimental to human health or habitat loss which will impact on biodiversity)
- Describes the potential for exposure to the hazard, which may be estimated using modelling approaches or by direct measurement of an existing situation

- Estimates the risk, or likelihood of a negative effect, based on the hazard and exposures
- Considers uncertainties which may be inherent in arriving at the risk estimate.

**ERA is a process which helps answer the following:**

- What can go wrong? (risk perception)
- What is the likelihood and severity of any adverse occurrence? (risk assessment)
- What can be done to manage any significant adverse occurrence and who should be involved? (risk management and risk communication)

ERA is really a systematic process that can be employed at various tiers of decision-making (from policy, programme, project or activity).

The project proponent is usually the initiator, but the investors or stakeholders who may be impacted could also initiate the process.

For further information: [www.oilandgasforum.net/oefonline/module4\\_enra.htm](http://www.oilandgasforum.net/oefonline/module4_enra.htm)

### Slide 49 Assessment tool: Environmental Technology Assessment (EnTA)

Environmental Technology Assessment (EnTA) helps decision-makers assess the potential impact of using a new or existing technology. The assessment considers the costs of the technology, the monetary benefits, and its environmental, social and political impacts.

The tool provides:

- A description of the technology, its goal, the likely stakeholders, etc.
- An assessment of the environmental pressure and impacts of using the technology
- An evaluation of the environmental risks and their significance
- A comparative assessment of alternative technologies
- Recommendations on technology choices.

Case Study 3-13: CP in a Czech Slaughterhouse, and 4-7: Hitega, Chile

The proponent of the technology usually makes use of EnTA, but investors and stakeholders who may be impacted may also use it.

For further information:

- [www.uneptie.org/pc/pc/tools/enta.htm](http://www.uneptie.org/pc/pc/tools/enta.htm)
- [www.uneptie.org/pc/cp/library/training/cdgpac/enta.htm](http://www.uneptie.org/pc/cp/library/training/cdgpac/enta.htm)

### Slide 50 EnTA for Identification and Selection of ESTs

Environmental Technology Assessment (EnTA) is a systematic procedure to assess technology options at the **pre-investment** stage, with a focus on their relative environmental performances, the implications for sustainable development and the likely cultural and socio-economic consequences.

EnTA helps planners, decision makers in government, the private sector, communities and other stakeholders to reach a consensus on the technology intervention that is expected to be the most environmentally sound, socially acceptable and economically viable for a specified location and application.

EnTA is being promoted by the United Nations Environment Programme's (UNEP) Division of Technology, Industry and Economics, and specifically by its International Environmental Technology Centre (IETC) and its Production and Consumption (P&C) Branch, as well as by other international governmental and private sector organisations. Now that a comprehensive suite of EnTA methodologies, tools and materials is in place, there is a need to optimise application of these resources, consistent with the view that EnTA is an integral part of a dynamic, evolving process of assessment, transfer, uptake and verification of ESTs.

EnTA is not intended to replace other assessment tools already in use, including Environmental Impact Assessment (EIA), Environmental Risk Assessment (ERA) and Life Cycle Assessment (LCA). EnTA has a different focus since it is totally oriented to identifying and evaluating both specific and broader environmental impacts, is predominantly qualitative and comparative, and examines the wider technological process over its entire life cycle.

EnTA provides a particularly valuable tool for determining whether a technology will meet specific performance criteria. It highlights steps in the process where Cleaner Production techniques (such as Pollution Prevention and Toxic Use Reduction) and tools such as Cost-Benefit Analysis and Social Impact Assessment may be applied with advantage.

### Slide 51 Key characteristics of EnTAs

The key and differentiating characteristics of EnTA are:

- Technology focused
- Focused at enterprise level rather than national policy level
- Designed to ensure consideration of alternative technology interventions
- Simplifying, flexible, largely qualitative yet often subjective
- Designed to involve, and reflect the interests of, multiple stakeholders
- Scoping tool - to be used at the "idea stage", rather than after development of a formal/full proposal when it is more appropriate to undertake an environmental impact assessment
- A proactive environmental management tool
- Multidisciplinary in approach
- Comprehensive and integrated – with respect to the full life cycle and broad implications of the technology system
- Identifies if more sophisticated assessment tools should be used; and
- Voluntary – it is not considered to be a regulatory tool

It is important to draw attention to the following aspects of an EnTA:

- Intended to be used to prevent environmental problems, rather than solving them after they have become apparent;
- Technical, economic and environmental conditions and processes can often be complex;

therefore many different skills are required in assembling, combining, interpreting, and communicating information;

- Involves simplifying both the relationships between the technology and its environment, and the consequences of those interactions;
- Examines the environmental effects of the entire technological system including the resources used and the wastes produced, *over the full life cycle* of the technology;
- Considers the wider technological system, rather than the technology itself, in isolation;
- Identifies and assesses alternative technology options rather than just the one advocated by the technology investor; and
- Recognises that the “environment” is wider than ecosystems and living resources, for it includes economic, social, aesthetic and cultural conditions and amenity values.

### Slide 52 Overview of an EnTA

Technologies do not exist in isolation, but are affected by the environment within which they function. And in turn they affect their surroundings. The approach taken in an EnTA is to identify, in a systematic and transparent manner, both the resource demands and environmental pressures generated by a technology, and then determine the likely implications for the environment. The sequence is described by the acronym “DICE”:

- Describe the proposed technology intervention, any alternatives, their requirements, and the operating environment;
- Identify the *pressures* the technology places on the environment;
- Characterise the environmental *impacts* these pressures may cause; and
- Evaluate the overall *consequences* of the impacts, in light of local conditions.

Each demand a technology generates has an impact upon aspects of the wider environment. Some of these impacts will be beneficial and some will not. In an EnTA several impact ‘end-points’ (or environmental outcome categories) are considered. These are Human Health, Local Natural Environment, Global Environment, Social and Cultural Disruptions and Resource Consumption. The use of such end-points assists in assessing the potential impacts of a technology on the wider environment.

### Slide 53 The EnTA Process

This diagram provides an overview of the EnTA process.

### Slide 54 EnTA Identification of Environmental Pressures

This is an example of a checklist used in EnTAs for identifying Environmental Pressures.\

### Slide 55 EnTA Preliminary Judgement of Impacts

This is an example of a worksheet used in EnTAs for the preliminary judgement of environmental impacts of a technology.

### Slide 56 EnTA Performance Data

Performance data on various technologies that have undergone EnTAs may be obtainable from the following sources:

- *MaESTRO* – a website linked to the UNEP DTIE which provides a searchable database of Environmentally Sound Technologies <http://www.unep.or.jp/maestro2/>
- Technical publications
- Academic Journals
- Expert information

### Slide 57 Assessment tool: CP Opportunity Assessment

A CP Opportunity Assessment is a systematic approach to identifying opportunities for implementing cleaner production/eco-efficiency measures in a company. The assessment should look at identifying practical opportunities relating for example to each of the following steps:

- Changing raw material and energy inputs
- Organisation and management practices
- Changing equipment and process technologies
- Re-using and recycling wastes (internally and externally)
- Introducing changes to the product and packaging

### Slides 58-59 Examples of CP worksheets

The next two slides present some examples of practical worksheets that can be used to assist in identifying opportunities within the company for implementing CP measures. These worksheets come from the *Efficient Entrepreneur Calendar: Assistant* of the UNEP/Wuppertal Institute. More information on this initiative is available from [www.efficient-entrepreneur.net](http://www.efficient-entrepreneur.net)

### Slides 60-61 Assessment tool: Life-cycle Assessment

Life cycle assessment (LCA) provides a systematic approach to measuring resource consumption and environmental releases throughout the entire life cycle of a product or service – from resource extraction, raw material transport, manufacture, distribution and use, to final disposal. This is achieved through the compilation of an “inventory” of energy and resource usage, waste generation, emissions and discharges in each stage of the product life cycle.

An LCA can be a powerful tool for effective decision-making when comparing the relative environmental merits of two or more product or service categories. LCA activities often form an important component of product eco-labels and design for environment activities, as well as in identifying effective cleaner production possibilities.

An LCA is carried out in three stages:

- Identifying and quantifying the environmental loads (the energy and raw materials consumed and waste generated)
- Assessing and evaluating the potential environmental impacts of these loads and;
- Assessing the options available for reducing these environmental impacts.

LCA can be used by industry and other types of commercial enterprise, NGOs and consumers. They are, however, expensive and complex to implement. The environmental (and social) impacts of raw material extraction may vary from country to country, and subjective assessments are often required in assessing the relative weightings that emissions should be given.

Life Cycle Assessment attempts to systematically account for that entire web of resources and impacts, and offers a powerful, though still developing tool to rigorously comparing the environmental consequences of product and process choices.

LCA is the focus of one aspect of the emerging ISO 14000 environmental standards – ISO14040. Over the last ten years there has been a rapid expansion in the demand for and use of LCAs, fuelled by both industry and governments. For industry, a major use is in characterising current operating practices with a view towards how industry stands in relation to current and proposed legislative measures. A series of LCAs performed by any company over consecutive years will fully determine that company's operating practices as well as establishing manufacturing trends. It also helps a company in setting requirements for suppliers in supply chain management (see below Slide 60). For government, awareness of the implications of proposed legislation, especially when the effects may counter those originally intended, can help in usefully amending legislation before it is adopted. A suitable example of this is the setting of realistic recycling targets.

For enterprises in rapidly emerging economies, a ready access to up-to-date technologies and know-how is vital. Joint ventures with companies in the West for such an access is now an established approach. For the interested companies, particularly in large and populous countries such as India and China, an ideal selling point would be the demonstration of their full awareness of the environmental aspects of their operations and adherence to regulations. This is where LCA, as an internationally accepted methodology for establishing full environmental credentials, would be invaluable. Equally, the application of LCA as a management tool could identify optimum strategies for companies interested in becoming resource and energy efficient to international standards.

The interpretation of LCA is still being developed with the result that this step is often omitted from LCA studies: in such cases, what is really being presented is a life cycle inventory (LCI).

Slide 57 provides an example of the life cycle associated with a pair of jeans. Ask delegates to consider what the life cycle of their particular products may look like, and where the most significant environmental impacts are likely to occur. Consider also where in the life cycle most of the environmental management efforts are currently focused.

*For further information:*

- [www.uneptie.org/pc/pc/tools/lca.htm](http://www.uneptie.org/pc/pc/tools/lca.htm)
- <http://www.howproductsimpact.net/box/>

## Slide 62 Monitoring and Auditing Tool: Total Cost Assessment (TCA)

Case Study  
4-9:  
Elk Falls Pulp  
Mill

The concept of Total Cost Assessment (TCA), developed in 1991 by the Tellus Institute in Boston, is a useful tool for integrating business and environmental objectives. TCA captures costs and savings that are generally ignored by traditional approaches, with the aim of allowing environmental investments to compete more successfully for limited capital funds. TCA helps to 'level the playing field' for investments in environmental improvements and pollution prevention.

TCA goes beyond traditional accounting by examining changes in direct, indirect, contingent and less-quantifiable costs and savings over the longer term. TCA is generally viewed as one tool within the broader field of environmental accounting which seeks to ensure that past, present and future environmental activities are suitably provided for in corporate decision-making.

### The Five Major Full Cost Accounting Principles

FCA embodies several key concepts that distinguish it from cash accounting techniques. The following list highlights the five basic tenets of FCA:

- **Accounting for costs rather than outlays.** An outlay is an expenditure of cash to acquire or use a resource. A cost is the value of the resource as it is used. For example, an outlay is made when a truck is purchased, but the cost of the truck is incurred over its active life (e.g. 10 years). The cost of the truck needs to be allocated over the period of its use because every year of use contributes to the deterioration of the truck's value.
- **Accounting for hidden costs.** With FCA, the value of goods and services is reflected as a cost even if no cash outlay is involved. An organization might receive a grant, for example, to purchase equipment. This equipment has value, even though the organization did not pay for it in cash. The equipment, therefore, should be valued in an FCA analysis.
- **Accounting for overhead and indirect costs to individual services.** FCA accounts for all overhead and indirect costs, including those that are shared with other departments. Overhead and indirect costs might include administrative support, billing, data processing, legal services, and purchasing.
- **Accounting for past and future costs.** FCA includes past and future costs that often do not appear on annual budgets under cash accounting systems. Past (or upfront) costs are initial investments such as the acquisition of vehicles, equipment, or facilities. Future (or back-end) costs are costs that will be incurred to complete operations such as post-employment health and retirement benefits.
- **Accounting for costs according to activities or paths.** For example in solid waste management, activities include waste collection, operation of transfer stations, transport, waste processing and/or disposal, and sale of by-products. Paths include recycling, composting, waste-to-energy, and land disposal. Both the path and the activity ways of looking at costs can be useful. Understanding the costs of each activity often will be necessary for compiling the costs of the entire system and helps evaluate whether to provide a service yourself or contract out for it. However, in considering changes that affect how much waste ends up being recycled, composted, converted to energy, or landfilled, you should focus on the costs of the different paths. Understanding the full costs of each path is an essential first step in discussing whether to shift the flows of solid waste management one way or another.

Extracted from "Full cost accounting in Action" United States Environmental Protection Agency  
EPA530-R-98-018 December 1998 [www.epa.gov](http://www.epa.gov)

## Slide 63 Environmental auditing

Case Study  
4-11:  
RMC Group

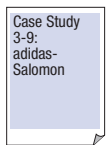
An environmental audit is a "systematic, documented verification process for objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems or information about these matters confirm with audit criteria, and communicating the results of this process."

Environmental audits may be used in companies to assess compliance with:

- Environmental laws and standards
- A company's environmental management system (eg ISO 14001)
- A company's environmental / sustainability report

## Slide 64 Supply chain audits and assessments

There are two overriding reasons why a company that has committed to sustainable development will look to its supply chain.



- First, because most of the innovations it may wish to implement within its own operations will depend heavily on the quality (and sustainability) of what is coming in through its supply chain. As has been demonstrated in the global movement to quality management systems, one's own best efforts can easily be undermined if one's suppliers are working to lower standards.
- Secondly, management for sustainability implies a focus on long-term risk reduction, and in achieving this one's dependence on other companies' values and performance is critical.

An important supply chain management tool is the supply chain audit, whereby corporate purchasers undertake an assessment of the social and/or environmental performance of their suppliers. Effective supply chain audits can be a valuable means for larger more visible companies to transmit pressure for change, as well as necessary knowledge, down the supply chain.

While there has been some progress in promoting responsibility through corporate supply chains, it is recognised this remains an area where current practice remains relatively weak. Benchmarks such as the UK's Business in the Community Corporate Responsibility Index indicate that supply chain management is one of the least developed areas, a finding that has been confirmed in a recent international study by the World Bank and Business for Social Responsibility.

*For further information:*

- [www.projectsigma.com/RnDStreams/5\\_chain.asp](http://www.projectsigma.com/RnDStreams/5_chain.asp)
- [www.napm.org/](http://www.napm.org/)
- [www.chemicalstrategies.org/](http://www.chemicalstrategies.org/)
- [www.bsr.org/](http://www.bsr.org/)

## Slide 65 Environmental Performance Indicators

A key aspect of an EMS is to set targets and monitor progress against these targets. Environmental Performance Indicators are the most common means of measuring performance against targets. *Indicators* are a form of quantified information that is presented as broad-brush aggregated data that provides decision-makers and interested parties with an indication of performance trends. A key objective of indicators is to provide a summary set of statistics to assist in effective policy decision-making, and to allow the public to readily assess how performance is progressing towards stated targets.

*Sustainability Indicators* are specific indicators that provide reliable information on the current state

of each of the social, economic and environmental elements of sustainable development. These may include *input*, *output* and *outcome* indicators. These indicators may be aggregated into a smaller set of *composite indicators*. These are useful in simplifying a long list of indicators into a smaller subset of indicators that provide a visible indication of key trends. Most environmental performance indicators should be presented both as absolute and as relative/normalised measures (e.g. energy use per unit of output), as both measures reflect significant yet distinct elements of sustainable development. Absolute figures provide an indication of the organisation's direct impact on the environment, while relative figures highlight the organisation's efficiency, which may be useful for comparative purposes.

### Slide 66 Ecological Footprints

An ecological footprint is a graphic approach for conceptualising the environmental impact of a particular individual, organisation, product, service or political region, and for understanding how this relates to the overall carrying capacity of the planet.

Ecological footprint analysis provides an informative area-based indicator of sustainability.

Despite our technological, economic, and cultural achievements, achieving sustainability requires that we understand human beings as ecological entities. Indeed, from a functional perspective, the relationship of humankind to the rest of the ecosphere is similar to those of millions of other species with which we share the planet. We depend for both basic needs and the production of artefacts on energy and material resources extracted from nature and all this energy/matter is eventually returned in degraded form to the ecosphere as waste. The major material difference between humans and other species is that in addition to our biological metabolism, the human enterprise is characterised by an industrial metabolism.

Economic assessments of the human condition should be based on, or at least informed by, ecological and biophysical analyses.

This approach shows that humankind, through the industrial economy, has become the dominant consumer in most of the Earth's major ecosystems.

### Slide 67 Corporate Environmental / Sustainability Reporting

Case Study  
4-5:  
Bovince Ltd

Corporate reporting on environmental and social issues has grown dramatically over the last ten years. A recent international survey found that 45% of the Global Fortune Top 250 companies regularly publish a separate social, environmental and/or sustainability report. The most active sectors are utilities, chemicals, forestry, pulp and paper, mining, and oil and gas. Initially focusing mainly on environmental, health and safety or social issues, corporate reporting on non-financial matters is beginning to shift towards integrated "sustainability reporting" on the triple-bottom-line of environmental, social and economic performance. An important driver for this shift to sustainability reporting has been the development of the Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI). GRI is explained in further detail in Module 5.

The following general issues pertain to environmental and sustainability reporting:

- There is increasing community, regulatory and financial pressure on companies to report on their environmental performance.
- Such reporting should respond to the interests of key stakeholders and should report on issues that are material to the company's core business.
- The process of reporting should feed into development of company strategy, and should provide a stimulus for continuous commitment and improvement.
- The report should provide evidence that the company understands its key environmental impacts and should demonstrate its commitment to addressing these in an effective manner.
- Provision should be included for external verification / assurance.

### Slide 68 Sustainability Reporting – Key questions

An effective process of environmental reporting should consider the following issues:

- Motivation – Why report
- Market – To whom to report
- Message – What to report
- Medium – How to report
- Method – What process to report (including stakeholder engagement and assurance processes)

### Slide 69 GRI guidelines: Environmental performance criteria

The GRI Sustainability Reporting Guidelines includes a detailed set of criteria relating to a company's economic, social and environmental performance. The core environmental performance criteria relate to:

- Energy – total use / move to renewables
- Materials – total material use / specific issues
- Water – total water use
- Emissions, effluents and waste
- Transport – distance and method
- Suppliers – supply chain management
- Product and services – impact with use
- Land-use / biodiversity
- Compliance

### Slide 70 Report in accordance with GRI

A company that wishes to report “in accordance with” the GRI needs to

- Report on the numbered elements of Sections 1-3 in Part C
- Include GRI Content Index
- Respond to core indicators in Section 5 of Part C
- Ensure consistency with the reporting principles
- Include statement signed by Board or CEO

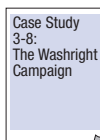
## Slide 71 The UNGC Principles and the GRI criteria

When considering areas in their corporate reporting to highlight support of the Global Compact principles (i.e. to communicate on progress) companies can use the table in Appendix 3 of the Delegates' Manual as an assistant guide. The table lists selected core performance indicators from the 2002 GRI Sustainability Reporting Guidelines against the three Global Compact environmental principles.

*For further information:*

- [www.globalreporting.org/](http://www.globalreporting.org/)
- [www.enviroreporting.com/](http://www.enviroreporting.com/)
- [www.acca.co.uk/sustainability/](http://www.acca.co.uk/sustainability/)
- [www.corporateregister.com/](http://www.corporateregister.com/)

## Slides 72-73 Stakeholder Engagement



A stakeholder is any individual or group who is affected by, or can influence, the activities of another group. For a company, this typically extends to employees and trade unions, shareholders, customers, suppliers, business peers, communities, regulators, NGOs and the media – individuals who have a legitimate interest in the activities of the company and to whom the company owes an account of its conduct.

Stakeholder engagement refers to the process of interaction between an organisation and its stakeholders, beyond the one-way communication of data. Such engagement may be undertaken in order to gather information and ideas, build and strengthen relationships and trust, improve decision-making and enhance the company's reputation. There are a variety of techniques that can be employed as part of a stakeholder strategy. These include one-to-one interactions such as interviews, as well as one-to-many and many-to-many approaches such as focus groups, workshops, postal and electronic surveys, community panels, telephone hotlines and stakeholder advisory boards.

Effective stakeholder engagement forms an important component of a company's efforts at promoting sustainable development. It is valuable in fostering trust and developing social capital, and is most important in developing an effective and appropriate sustainability strategy that is based on a common understanding and agreement as to what sustainability means for the company. For this to be realised, companies need to be committed to implementing a process of engagement as a means of shared learning with stakeholders, with the aim of including and empowering them in the development of their strategy. Stakeholder engagement is at the core of AccountAbility 1000 (AA1000), a management framework that seeks to improve the quality of social and ethical accounting, auditing and reporting. It is also explicitly referred in the GRI Sustainability Reporting Guidelines as an important basis for identifying the key performance parameters.

A well planned stakeholder dialogue:

- Helps to scope and prioritise issues
- Allows for greater understanding between stakeholders and their respective needs and constraints
- Ensures direct engagement of different groups and helps forge alliances, collaborative partnerships and shared principles

- Enables people to both recognise and take responsibility
- Encourages synergy and new ideas
- Manages disagreement and conflict

The following are important vehicles for stakeholder engagement and dialogue:

- Sustainability reports
- Company websites (inter/intranet)
- Company newsletters
- Product information (eg. product declarations and eco-labels)
- Consumer surveys and panels
- Annual consultative stakeholder dialogue and meetings

For more guidance on stakeholder engagement, refer to the *Stakeholder Engagement Manual* by UNEP, AccountAbility and Stakeholder Research Associates (2005), available online at <http://www.unep.fr/outreach/home.htm>. It has two volumes. Volume 1 provides a collection of perspectives from companies, industry associations, labour unions and NGOs on their experiences with stakeholder engagement. Volume 2 provides a step-by-step guide for the company on how to start and improve its engagement with stakeholders, based on a selection of core principles and focusing on continual improvement.

### Slides 74-76 Environmental Labelling and Product Declarations

An eco-label is a market-driven environmental policy instrument used by policy-makers with the aim of promoting environmentally preferable goods and services. The label is applied to a product or service, warranting that the product or service complies with certain pre-determined environmental – and sometimes also social – criteria. The eco-label makes a positive statement about the environmental aspects of a product, and is a reward for the environmental leadership embodied in such a product.

Eco-labels are a guide for consumers to choose products and services that are deemed to be less harmful to the environment than other products within the same category. A principal objective of eco-labels is to encourage the production of more environmentally appropriate products through consumers' purchasing power. Although the distribution of eco-labels is largely concentrated in the industrialised countries, there have been a number of recent labelling initiatives within developing countries. Furthermore, the use of labels in developed countries may have increasingly significant trade consequences for developing countries.

Eco-labels are potentially attractive instruments for informing consumers (including institutions and governments that consume input materials and products) about the environmental impact of their purchasing decisions, while simultaneously providing producers with a tool for extracting market place preference, and thus market share. Eco-labels provide an opportunity to inform consumers about product characteristics that may not be readily apparent. Eco-labels are not directly quality labels; however, for a product to obtain an eco-label, it would have to be manufactured under strictly controlled conditions for it to pass the criteria laid down by the relevant eco-label.

Using a broad definition of eco-labelling, it is possible to classify eco-labelling programmes on the basis of various key characteristics, including in particular:

- Whether the programme relies on first-party or third-party verification.
  - *First-party verification* is undertaken by the producers / marketers themselves, with the aim of promoting the positive attributes of the product.
  - *Third party verification* is undertaken by an independent source that awards labels on the basis of defined environmental criteria.
- Whether the product labelling is positive, negative or neutral.
  - *Positive labelling* certifies that the product possesses one or more environmentally preferable attributes (e.g. no ozone depleting substances).
  - *Negative labelling* warns consumers of possible harmful effects substances contained in the labelled product.
  - *Neutral labelling* simply summarises environmental information regarding the product that may be used by consumers in making their product choices.
- Whether the third-party labelling programme is mandatory or voluntary.
  - *Mandatory programmes* typically include hazard/warning labels and information disclosure labels (e.g. Material Safety Data Sheets).
  - *Voluntary programmes* are generally positive or neutral initiatives, and include report-cards, seal-of-approval or single-attribute certification programmes
- Whether the (voluntary) labels are report-cards, or seal-of-approval or single-attribute certification programmes.
  - *Seal of Approval* programmes (ISO Type I labels) typically involve issuing a licence to use a particular logo to products on the basis that they are deemed to be less environmentally harmful than comparable products, as determined by specific award criteria that usually include some form of life-cycle consideration.
  - *Single Attribute Programmes* certify that claims made for a single attribute of a product meet a specified definition (e.g. “recycled” or “biodegradable”). This includes labelling schemes such as that administered by the private Forest Stewardship Council as well as organic food labelling.
  - *Report Cards* (ISO Type III labels) use a standardised format to categorise and quantify various impacts/burdens that a product has on the environment, thus allowing consumers to make judgements based on their particular environmental concerns.

Type III labelling has received increased prominence recently in the form of the **Environmental Product Declaration** scheme, which includes third-party verification. An environmental product declaration provides quantified environmental data for a product with pre-set categories of parameters (such as carbon dioxide emissions or global warming potential) based on the results of a life cycle assessment study that has been undertaken in accordance with the ISO 14040 standard series.

### Exercise 4.2 – Identifying environmental tools

With reference to the experiences in your own company identify which of the various environmental tools discussed in this session you have used in the recent past. Identify some of the key learning points associated with the implementation of each tool (you may wish to focus only on or two of tools), and share these with the colleagues in your small groups.

- What was the underlying motivation for introducing the tool in your company? Was there a particular champion who may have driven the introduction of this tool?
- What was the anticipated outcome of the tool? Has this objective been met? If not, why not?
- What do you think should be done differently for the tool to be more effective?

If delegates do not have clear examples from their own experience encourage them to use the case studies and to evaluate how useful these tools would be if applied to their own companies.

### Exercise 4.3 – Reviewing the case studies

Each delegate should choose one of the case studies contained in their manuals, read through it, and then present a summary of this case study to the other delegates. After presenting the case study, delegates should consider some of the key learning points that have arisen from this study, focusing in particular on the implications of the case study for their respective companies.

As the trainer you should encourage and facilitate an active discussion around each case study, making sure that the principal learning points are drawn out during the discussion and ensuring as far as possible that

### Exercise 4.4 – Benefits and barriers of environmental tools

The following table lists some of the principal types of environmental/sustainability tools that have been reviewed in this module. Using this table – and with reference to the experiences in their own company – workshop participants should identify which of the various environmental tools they have used in the recent past. For each of these tools, they should highlight some of the benefits that have been achieved in their company, and identify some of the key barriers that may have been encountered. For those tools that have not yet been used in their company and/or which they have not had direct experience with, they should identify what they see as potential benefits and barriers that may typically be associated with each tool. (Some broad suggested benefits and barriers are included in the table below for discussion purposes. These suggestions have not been included in the Delegates' Manual).

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<b>Environmental management tools</b>				
<b>Environmental Management Systems</b>	The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an environmental policy		<ul style="list-style-type: none"> <li>■ Help companies to identify and prioritise their key environmental impacts in a structured and systematic manner</li> <li>■ Provides a framework for setting clear objectives and targets for managing these impacts</li> <li>■ Ensures that structured processes and procedures are in place for measuring and monitoring performance</li> <li>■ May assist in identifying cost saving opportunities</li> <li>■ Can be an important basis for improving market access</li> </ul>	<ul style="list-style-type: none"> <li>■ Time consuming</li> <li>■ Requires a significant amount of paperwork and documentation</li> <li>■ Can be expensive</li> <li>■ There may be initial management reluctance</li> </ul>
<b>Internal training and communication</b>	The provision of structured training programmes aimed at building capacity and awareness on the benefits and techniques of environmental management.	Case study 3-3	<ul style="list-style-type: none"> <li>■ Ongoing employee and management training and communication is critical for ensuring sufficient commitment and understanding on benefits and techniques for integrating environmental principles into the business, and for changing attitudes and behaviour</li> <li>■ Can result in improved employee moral and assist in identifying cost saving opportunities associated for example with cleaner production</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially time consuming</li> <li>■ Seen as possible distraction from core business</li> <li>■ Insufficiently clear business benefits</li> </ul>

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<b>Cleaner production strategy and management programme</b>	The continuous application of an integrated preventive environmental strategy to processes, products and services so as to increase efficiency and reduce risks to humans and the environment.	Case study 3-11 and 4-7	<ul style="list-style-type: none"> <li>■ Prevention of environmental problems rather than “treat/cure”</li> <li>■ Saves money by addressing impacts at source</li> <li>■ Economic savings identified as well as environmental improvement</li> </ul>	<ul style="list-style-type: none"> <li>■ Cleaner Production skills needed</li> <li>■ May need to employ external consultants</li> <li>■ Requires input from senior management to shop floor</li> <li>■ Time consuming</li> <li>■ Training required</li> </ul>
<b>Eco-Efficiency</b>	Eco-efficiency is a management philosophy which aims to achieve “more with less” by making efficiency improvements within existing processes.	Case study 3-12	<ul style="list-style-type: none"> <li>■ Helps to identify approaches to producing more value with less input of energy and material, and with reduced emissions.</li> <li>■ Related economic savings can be significant</li> </ul>	<ul style="list-style-type: none"> <li>■ May need to employ external consultants</li> <li>■ Requires input from senior management to shop floor</li> <li>■ Training required</li> <li>■ There may be some initial management reluctance</li> </ul>
<b>Sustainable production and consumption</b>	It includes interventions that influence consumption patterns (e.g., product stewardship, product labelling and information and product design).		<ul style="list-style-type: none"> <li>■ Inspires innovation</li> <li>■ Potential competitive advantage beyond compliance</li> <li>■ Keeps company ahead of the game</li> </ul>	<ul style="list-style-type: none"> <li>■ Can be against core business model (i.e. to sell as much product as possible)</li> <li>■ Can be expensive to implement</li> <li>■ Requires R&amp;D</li> <li>■ There may be some initial management reluctance</li> </ul>
<b>Life cycle management</b>	An integrated concept for managing the total life cycle of products and services towards more sustainable consumption and production patterns.		<ul style="list-style-type: none"> <li>■ Provides a good understanding of environmental performance of products and processes</li> <li>■ Assists in making effective decision making</li> </ul>	<ul style="list-style-type: none"> <li>■ Expensive and time consuming</li> <li>■ Requires R&amp;D</li> <li>■ There may be some initial management reluctance</li> </ul>

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<b>Design for environment</b>	An integrated concept for managing the total life cycle of products and services towards more sustainable consumption and production patterns. Design changes may apply to: <ul style="list-style-type: none"> <li>■ raw materials</li> <li>■ manufacturing process</li> <li>■ product use</li> <li>■ end-of-life</li> </ul>	Case study 3-14	<ul style="list-style-type: none"> <li>■ Saves money and provides competitive advantage</li> <li>■ Design out environmental problems</li> <li>■ Improved risk management</li> <li>■ Potential first mover advantage by being proactive to possible environmental legislation</li> </ul>	<ul style="list-style-type: none"> <li>■ Requires R&amp;D, may be expensive initially</li> <li>■ Resistance to change</li> <li>■ May require process changes and new training</li> </ul>
<b>Product services systems</b>	Developing a marketable mix of products and services that are jointly capable of fulfilling a client's need - with less environmental impact		<ul style="list-style-type: none"> <li>■ A mix of products and services can fulfil the same client demands with less environmental and social impacts</li> <li>■ Competitive advantage</li> <li>■ Long-term sustainability</li> </ul>	<ul style="list-style-type: none"> <li>■ Resistance to change</li> <li>■ New skills and training required</li> <li>■ May involve initial up-front expenditure</li> </ul>
<b>Product stewardship (also known as shared responsibility, and extended producer responsibility)</b>	Product stewardship is where all parties involved in the production, selling or use of a product take responsibility for the full environmental and economic impacts that result from the production, use and disposal of that product.	Case study 4-8	<ul style="list-style-type: none"> <li>■ Manufacturers redesign products with fewer toxics, and with the aim of making them more durable, reusable, and recyclable, and with recycled materials</li> <li>■ Potential market advantages and longer-term cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Time consuming</li> <li>■ May be expensive initially</li> <li>■ Often requires R&amp;D</li> <li>■ May need new technical capacity and skills</li> </ul>
<b>Industrial ecology</b>	Industrial ecology aims to mimic natural ecosystems in industry. It looks at promoting the symbiotic co-location of industries so that waste from one industry can serve as a raw material input into another.	Case study 4-6	<ul style="list-style-type: none"> <li>■ May help companies to become more competitive by improving their environmental performance and strategic planning</li> <li>■ Helps communities develop and maintain a sound industrial base and infrastructure without sacrificing the quality of their environments</li> </ul>	<ul style="list-style-type: none"> <li>■ Difficult to identify potential suitable neighbours in same area</li> <li>■ Potentially expensive initially</li> <li>■ Often requires R&amp;D</li> <li>■ May need new technical capacity and skills</li> </ul>

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<b>Environmental assessment tools</b>				
<b>Environmental impact assessments</b>	Provides a description of accepted levels of performance and/or prompts the setting of performance targets. Identifies proven means for modifying behaviour to reach these performance targets.		<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and very time consuming</li> <li>■ May require involvement of external consultants</li> <li>■ Can have significant impact on project cycle in terms of timing and final decisions</li> </ul>
<b>Environmental risk assessments</b>	A structured process for describing a hazard, identifying the potential for exposure to the hazard, estimating the risk or likelihood of a negative effect based on the hazard and exposures and considering uncertainties associated with the hazard.		<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and time consuming</li> <li>■ May require involvement of external consultants</li> <li>■ Can have significant impact on project cycle in terms of timing and final decisions</li> </ul>
<b>Environmental technology assessments</b>	Helps decision-makers assess the potential impact of using a new or existing technology. The assessment considers the costs of the technology, the monetary benefits, and its environmental, social and political impacts.	Case study 4-10 and 4-12	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and time consuming</li> <li>■ May require specific technical skills</li> </ul>
<b>Cleaner production opportunity assessments</b>	A systematic approach to identifying opportunities for implementing cleaner production/eco-efficiency measures in a company		<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive</li> <li>■ May require specific technical skills</li> </ul>

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<b>Life cycle assessments</b>	Provides a systematic approach to measuring resource consumption and environmental releases throughout the entire life cycle of a product or service – from resource extraction, raw material transport, manufacture, distribution and use, to final disposal.		<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Useful for identifying and implement cost savings</li> <li>■ Valuable means for informing effective decision-making process</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and very time consuming</li> <li>■ May require specific technical skills</li> </ul>
<b>Total cost assessments</b>	TCA captures costs and savings that are generally ignored by traditional approaches, with the aim of allowing environmental investments to compete more successfully for limited capital funds. TCA helps to 'level the playing field' for investments in environmental improvements and pollution prevention.	Case study 4-9	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Useful for identifying and implement cost savings</li> <li>■ Valuable means for informing effective decision-making process</li> </ul>	<ul style="list-style-type: none"> <li>■ Requires specific technical skills</li> <li>■ Dependent on access to reliable information that often is not sufficiently available</li> </ul>
<b>Environmental monitoring and auditing tools</b>				
<b>Environmental auditing</b>	A systematic, documented verification process for objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems or information about these matters confirm with audit criteria, and communicating the results of this process	Case study 3-7	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Useful for identifying and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Requires specific technical skills</li> <li>■ May be time consuming</li> </ul>
<b>Supply chain audits</b>	Provides the means for monitoring progress in the performance of suppliers against the host company's environmental and/or social criteria.	Case study 3-9	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Useful for identifying and implement cost savings</li> </ul>	<ul style="list-style-type: none"> <li>■ Requires specific technical skills</li> <li>■ May be time consuming</li> </ul>

TOOL	SUMMARY	CASE STUDY	BENEFITS REALISED FOR THE COMPANY (General examples)	BARRIERS ENCOUNTERED (General examples)
<p><b>Environmental performance indicators</b></p>	<p>Indicators are a form of quantified information that is presented as broad-brush aggregated data that provides decision-makers and interested parties with an indication of performance trends.</p> <p>These may include input, output and outcome indicators, and may be aggregated into a smaller set of composite indicators.</p>		<ul style="list-style-type: none"> <li>■ Essential for effectively monitoring and tracking performance on a meaningful basis</li> <li>■ Useful for external communication and accountability</li> </ul>	<ul style="list-style-type: none"> <li>■ Requires specific technical skills</li> <li>■ May be time consuming</li> <li>■ Needs effective internal monitoring and reporting structures</li> </ul>
<b>Environmental communication and reporting tools</b>				
<p><b>Corporate environmental / sustainability reporting</b></p>	<p>Disclosure by a company of its environmental (and often also its overall “sustainability”) performance. Many companies report against a set of core indicators (including those contained in the GRI guidelines) as well as against issues of concern identified by external stakeholders.</p>	<p>Case study 4-5</p>	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> <li>■ Useful mechanism for informing strategy and for building trust with external stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and time consuming</li> <li>■ May require involvement of external consultants</li> <li>■ Can have significant impact on project cycle in terms of timing and final decisions</li> </ul>
<p><b>Stakeholder engagement</b></p>	<p>The process of interaction between an organisation and its stakeholders, beyond the one-way communication of data. Such engagement may be undertaken in order to gather information and ideas, build and strengthen relationships and trust, improve decision-making and enhance the company’s reputation.</p>	<p>Case study 3-3</p>	<ul style="list-style-type: none"> <li>■ Helps companies to proactively identify and manage potential environmental risks</li> <li>■ Can be used to identify and implement cost savings</li> <li>■ Useful mechanism for informing strategy and for building trust with external stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>■ Potentially expensive and time consuming</li> <li>■ May require involvement of external consultants</li> <li>■ Can have significant impact on project cycle in terms of timing and final decisions</li> </ul>

## MODULE 4: FROM PRINCIPLE TO PRACTICE

### Session 3: Principles to Practice – Additional Reference Material

The list below offers a broad range of training programmes and kits in the environmental management arena. These should help you develop and enrich your course material, and to integrate ideas and information into existing teaching programmes. Also listed below are some other publications that can be readily converted into teaching material.

#### **General**

##### *The Efficient Entrepreneur Programme*

Led by UNEP/Wuppertal Institute. Includes calendar and guide book which help small companies (SMEs) to measure and improve business performance month by month. [www.efficient-entrepreneur.net](http://www.efficient-entrepreneur.net)

#### **Cleaner Production**

##### *Cleaner Production: A Training Resource Package*

This package focuses on CP. It assists individuals who wish to teach the techniques and ethos of cleaner production at educational institutions, but it is also applicable to training at government and company level. [http://www.uneptie.org/pc/cp/library/catalogue/cp\\_training.htm](http://www.uneptie.org/pc/cp/library/catalogue/cp_training.htm)

#### **Sectoral Workbooks**

- Pulp and Paper Mills
- Leather Tanning
- Breweries
- Textile Wet Processing
- Lead-Acid Battery Recycling

Available from UNEP DTIE website or on CD ROM. More information for PDFs can be found on: <http://www.uneptie.org/pc/cp/library/home.htm>

#### **Capacity Building in Training Centres**

Training Package 1 includes three components:

- Integration of Sustainable Production and Consumption
- The Application of Environmental Technology Assessment (EnTA)
- Using Cleaner Production to Facilitate the Implementation of Multilateral Environmental Agreements

Training Package 2 focuses on how to establish and operate a CP Centre including background on CP, training on the tools used by Centres, and information/advice concerning other key operational issues.

#### **Trainer's guide**

Introduction to Cleaner Production concept and practice, Introduction to capital budgeting and funding of capital projects, Profiting from Cleaner Production, and Funding Cleaner Production projects.

Short executive presentations 'Profiting from Cleaner Production' for government, industry, and financiers (includes CD-ROM). More information can be found at <http://www.financingcp.org/training/training.html>

### ***Profiting from Cleaner Production: Checklists for Action***

This support document gives a set of checklists for businesses, government and banks to facilitate financing Cleaner Production investments. More information for PDFs and other materials at: <http://www.financingcp.org/training/training.html>

### ***Life Cycle Assessment***

#### ***Life Cycle Assessment: What It Is and How to Do It***

An introduction to LCA, covering its main characteristics and applications, where and why it is used and other tools associated with it. This report provides a useful structure for anyone interested in this teaching approach. More information on: <http://www.uneptie.org/pc/pc/tools/lca.htm>

#### ***UNEP, Life Cycle Management programme***

The UNEP DTIE Life Cycle Management programme is oriented to the application of life cycle approaches. The LCM programme creates awareness and improves skills of decision-makers by producing information materials, establishing forums for best practice, and carrying out training programmes in all parts of the world.

[http://www.uneptie.org/pc/sustain/lcinitiative/lcm\\_program.htm](http://www.uneptie.org/pc/sustain/lcinitiative/lcm_program.htm)

#### ***UNEP, Life Cycle Initiative training material***

The Life Cycle Inventory programme refers to the second phase of LCA and aims at increasing the access to and quality of LCI databases. The LCI programme improves global access to transparent, high quality life cycle data by hosting and facilitating expert groups whose work results in (web-based) information systems. <http://www.uneptie.org/pc/sustain/lcinitiative/training.htm>

The Life Cycle Impact Assessment programme refers to the third phase of LCA and deals with the evaluation of environmental impacts (e.g. climate change and toxicity) of products and services over their whole life cycle. The LCIA programme increases the quality and global reach of the life cycle indicators by promoting the exchange of views among experts whose work results in a set of widely accepted recommendations.

### ***Eco-design***

#### ***Eco-design: A promising approach to sustainable production and consumption***

This manual provides basic information to support education programmes in eco-design. More information from: <http://www.uneptie.org/pc/pc/tools/ecodesign.htm>

### ***Sustainable Consumption***

- UNEP/UNESCO: YouthXchange, training kit on responsible consumption, 2002  
<http://www.youthxchange.net>
- UNEP, Production and Consumption tools  
<http://www.uneptie.org/pc/pc/tools/ems.htm>  
<http://www.uneptie.org/pc/pc/tools/supplychain.htm>

- UNEP, Sustainable Procurement Activities  
<http://www.uneptie.org/pc/sustain/design/green-proc.htm>

### ***Talk the Walk – Advancing Sustainable Lifestyles through Marketing and Communication***

This publication by UNEP, the Global Compact Office and Utopies (2005) provides critical analysis and a collection of examples of advertising to promote sustainable lifestyles. It builds on the Global Compact Policy Dialogue on 'Sustainable Consumption: Marketing and Communications', hosted by UNEP and the Global Compact in Paris, April 2004. Available at:  
<http://www.unep.fr/pc/sustain/> and <http://www.utopies.com/indexflash.htm>

### ***Reporting***

#### ***High 5! – Introducing SMEs to sustainability reporting and the GRI***

This handbook was developed using a multi-stakeholder consultative process convened by the Global Reporting Initiative (GRI) in response to many requests for a "beginner's guide". It offers a step-by-step guidance and practical how-to advice on using the GRI Sustainability Reporting Guidelines, so that SMEs can easily and effectively create sustainability reports that bring value to their businesses and communications practices. Available from:  
<http://www.globalreporting.org/workgroup/sme/intro.asp>

### ***Stakeholder engagement***

The Stakeholder Engagement Manual: Volumes I and II 2005, by UNEP, AccountAbility, Stakeholder Research Associates. A practitioner's package to guide companies and others in how to approach stakeholder engagement to deliver lasting impact. The manual provides case study examples and reminders of what works and what doesn't. <http://www.unep.fr/outreach/home.htm>

### ***Environmental Technology Assessment***

An interactive, e-learning package designed to increase dissemination, aid promotion and facilitate the application of Environmental Technology Assessment (EnTA).  
<http://www.uneptie.org/-pc/pc/tools/enta.htm>

### ***APELL***

#### ***A Training Resources Package: Management of Industrial Accident Prevention and Preparedness***

This package provides material to give an introduction to the issues of industrial accidents and APELL. It includes background papers, references, overhead slides, case studies and work exercises. More information is available from:  
[http://www.uneptie.org/pc/apell/publications/related\\_pubs.html](http://www.uneptie.org/pc/apell/publications/related_pubs.html)

### ***Tourism***

#### ***Sowing the Seeds of Change: An Environmental Teaching Pack for the Hospitality Industry***

This is a comprehensive information pack for developing and expanding the environmental curriculum in hotel schools, produced with the International Hotel and Restaurant Association and EUHOFA. More information on: <http://www.uneptie.org/pc/tourism/library/training-hotel.htm>

### ***Thematic Publications, Brochures***

The above training manuals are supported by a library of UNEP documents on various technolo-

gy and policy issues, as listed in the brochures below – available on:

<http://www.uneptie.org/pc/-pc/library.htm>

#### ***Hazardous Waste***

Training Resource Pack for hazardous waste management in developing economies. More info on: <http://www.uneptie.org/pc/hazardouswaste/menu.htm>

#### ***Hazardous Waste Policies and Strategies – a trainer s manual***

UNEP/ISWA (1991) Included in Training Resource Pack referenced above; also on: <http://www.uneptie.org/pc/hazardouswaste/ssmenuD2.htm>

#### ***Landfill of Hazardous Industrial Wastes – A trainers manual***

UNEP/ISWA included in Training Resource Pack referenced under APELL; also on <http://www.uneptie.org/pc/hazardouswaste/ssmenuD3.htm>

#### ***Risk Management of Contaminated Industrial Land***

Included in Training Resource Pack referenced under APELL; also on <http://www.uneptie.org/pc/hazardouswaste/ssmenuD5.htm>

#### ***Environmental Management System (EMS) Training Resource Kit 2nd Edition (UNEP/FIDIC/ICC)***

Allows trainers to conduct courses in environmental management systems and offers guidance on adapting the kit to local conditions and culture. More information on: <http://www.uneptie.org/pc/mining/library/publications/manual.htm>

#### ***UNEP/FIDIC / ICLEI Urban Environmental Management: Environmental Management Training Resources Kit***

This offers local authorities a systematic approach to integrate environmental considerations into all aspects of their activities. More information on: [http://www.unep.or.jp/ietc/Announcements/EMSkitt\\_launch.asp](http://www.unep.or.jp/ietc/Announcements/EMSkitt_launch.asp)

#### ***Environmental Impact Assessment: Training Resource Manual***

Produced by DTIE Economics and Trade Unit. Also available on: [http://www.unep.ch/etu/publications/EIAMan\\_2edition.htm](http://www.unep.ch/etu/publications/EIAMan_2edition.htm)

Environmental Technology Assessment (EnTA) – is a tool for improving the quality of decision-making, building consensus among stakeholders and keeping assessments focused. Teaching material can be developed from EnTA on-line, found on: <http://www.unep.or.jp/ietc/Publications/index.asp>

#### ***Environmental Technology Assessment (EnTA) in Sub-Saharan Africa – a UNEP EnTA Leadership***

More information: [http://www.unep.or.jp/ietc/Publications/index\\_Integrative.asp](http://www.unep.or.jp/ietc/Publications/index_Integrative.asp)

#### ***The Environmental Management Navigator***

The package includes materials for training of SMEs on selecting and applying appropriate tools for improved environmental management and performance. For more information: <http://www.em-navigator.net/>

**Resources for Life Cycle Assessment and Life Cycle Management:**

<http://www.uneptie.org/pc/pc/tools/lca.htm>

**Environmental Management of Industrial Estates: Information and Training Resources**

This manual shows the potential environmental impacts of industrial estates, introduces the strategies and tools that are available for managing these impacts, and provides case studies collected from real practices around the world. It also proposes some modules for training workshops and a collection of overhead presentations. A list of further reading and contacts is included. Also available on:

<http://www.uneptie.org/pc/ind-estates/support-tools/Kit.htm>

**Final Report on Joint Conference on Engineering Education and Training for Sustainable Development**

This report has been prepared for the sponsors and delegates of the conference. The collected papers are held by the UNEP DTIE Information Centre in Paris. Some of the material is also available on the Conference website available from here: <http://www.enpc.fr>

**Training Publications/Sources from other DTIE Branches/UNEP Institutions**

Additional useful training materials on energy issues can be found at <http://www.uneptie.org/energy/act/re/RETS/index.htm> <http://www.ared.org/training/index.htm>

**OzonAction**

Training resources awareness materials, guidelines, resource modules and reports can be found on: <http://www.uneptie.org/ozonaction/>

**Energy**

Information useful for training and education on environmentally sound technologies and services can be found on: <http://www.unep.fr/en/branches/energy.htm>

**Chemicals**

Information useful for training and education can be found on: <http://www.chem.unep.ch/publications.htm>

**Economics and Trade**

Information useful for workshops and seminars can be found on: <http://www.unep.ch/etu/etp/acts/manpols/index.htm>

**International Environmental Technology Centre (IETC)**

Information on materials useful for teaching can be found on: <http://www.unep.or.jp/ietc/Publications/index.asp>

**Training on tools for SCP:** <http://www.uneptie.org/pc/cp/library/training/cdgpac/cpsc.htm>

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