UNITED NATIONS GLOBAL COMPACT

Environmental Principles Training Package

Module 3

UNDERSTANDING THE GLOBAL COMPACT ENVIRONMENTAL PRINCIPLES

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MODULE 3: UNDERSTANDING THE UNGC ENVIRONMENTAL PRINCIPLES

Session 1: Principle 7 – The Precautionary Approach

TIME: 2 hours

OBJECTIVES:

The objectives of this session are:

- to provide a sound understanding of the practical implications of implementing UNGC Principle 7 – the precautionary approach, and
- to test this understanding through the use of case studies (note: these case studies are included separately in the accompanying Delegates' Manual).

SUGGESTED PROCEDURE:

If possible, before beginning the course, you should arrange for the delegates to have read the background reading relevant to this module and its exercises. These are in the Delegates' Manual, and include:

- Case study 3-1: Sasol (South Africa)
- Case study 3-2: British Telecom (UK)
- Case study 3-3: Aracruz (Brazil)

Start the presentation, and then, as outlined in slide 2, facilitate a 15 minute discussion around the delegates' understanding of the precautionary approach. To get the discussion going, prompt delegates with the following questions which you could write up on a flip-chart:

- Can you think of a project/activity that your company has either had to drop, or to significantly change, due to environmental concerns?
- In making this decision, what precautionary actions were adopted?
- How were the environmental risks identified? Were any external stakeholders involved?
- What tools did the company use in this process? (possible examples include environmental impact assessments, environmental and health risk assessments, and public participation techniques)
- What alternatives were considered?

Continue with the presentation. Make sure you have the Wingspread Statement definition up on the board throughout the session, as it will be referred to often.

The PowerPoint presentation (including the 15 minute discussion above) should take no more than 1 hour. Allocate 1 hour to Exercise 3-1.

Speaker's Notes

Slide 1 Title slide

Slide 2 Principle 7

Read the principle out:

Business should support a precautionary approach to environmental challenges

Ask the delegates what they understand by this, and to provide an example of any instances when such an approach may have been applied in their business activities.

To help in this process, ask them to consider the following questions (some of which you may choose to have written up on a flipchart or white board):

- Can you think of a project/activity that your company has either had to drop, or to significantly change, due to environmental and health concerns?
- In making this decision, what precautionary actions were adopted?
- How were the environmental/health risks identified? Were any external stakeholders involved?
- What tools did the company use in this process? (possible examples include environmental impact assessments, environmental and health risk assessments, and public participation techniques)
- What alternatives were considered?

The aim of this discussion is to get the delegates to identify some of the main concerns and implications at a practical level, ideally within the context of a specific practical example that one (or more) of them may have been involved in. During the rest of the session these issues will be unpacked in more detail.

Slide 3 The Precautionary Approach: A Brief History

Before examining the practical implications of the concept it is useful for delegates to have a very brief appreciation of the history of the concept, and the extent to which it is increasingly being used (albeit at times with some controversy) in various multinational environmental agreements.

The conceptual origin of the precautionary approach as a distinct principle of environmental policy-making may be dated back to various developments in environmental law in the 1960s and 70s in Europe, most notably:

- The Swedish Environment Protection Act (1969), which introduced the concept of "environmentally hazardous activities" for which "the mere risk (if not remote) is to be deemed enough to warrant protective measures or a ban on the activity".
- The German *Vorsorgeprinzip* ("forecaring") Principle, which was implemented in the German clean air policies of the 1970s; this principle called for prior care, foresight and forward planning to prevent harmful effects of pollution.

Since then the precautionary approach has been articulated in a number of international declarations and multinational environmental agreements, including:

- ***The UN Framework Convention on Climate Change (1992)*** – which calls on Parties to take "precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects".
- ***The UN Convention on Biological Diversity (1992)*** – which states that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat".
- ***The Stockholm Convention on Persistent Organic Pollutants (2001)*** – uses the precautionary approach as a standard for adding to its original list of twelve regulated chemicals.
- ***The Cartagena Protocol on Biosafety (2003)*** – allowing countries to apply a precautionary approach regarding decisions on importing genetically modified organisms.

Slide 4 "Approach" or "Principle"?

The difference between the precautionary approach and the precautionary principle is a contentious issue, and one that has bedevilled the negotiation of multilateral environmental agreements, with considerable debate evidenced in particular in the differing positions of negotiators in Europe and North America. Generally, the precautionary "principle" is seen to be more stringent than the "approach."

The difference between the two concepts involves both (i) a legal debate and (ii) an ethical debate with different interpretations. The debate essentially boils down to:

- Whether precaution should be applied in an absolutist (principle) or flexible (approach) manner.
- Shifting the burden of proof completely to project proponents (principle), or recognizing that there is a responsibility in seeking jointly with stakeholders an appropriate definition of "acceptable risk" when addressing complex issues (approach).

The UN Global Compact makes specific reference to the precautionary "approach" rather than to the "principle."

Slide 5 The Rio Declaration Definition

A useful starting point for a discussion on the precautionary approach is to consider Principle 15 of the 1992 Rio Declaration (from the 1992 Earth Summit).

Read out the Principle, focusing on the last sentence in particular:

> *"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*

Draw attention to the following key concepts: "serious or irreversible damage"; "lack of full scientific certainty", and "cost-effective measures to prevent environmental degradation".

Explain that the precautionary approach is intended as a guide to public policy decision-making. It responds to the realisation that humans often cause serious and widespread harm to people, wildlife, and the general environment. According to the precautionary approach, precautionary action should be undertaken when there are credible threats of harm, despite residual scientific uncertainty about cause and effect relationships.

Draw attention to the fact that current knowledge of environmental systems is still not sufficient to be able to predict the effect of many human activities on the environment with any certainty. Ask delegates to identify some examples of this. Prominent current examples include the debates concerning the effect of fossil fuels on the global climate, the possible impacts of genetically modified organisms on the natural environment, or the health implications of mobile phone technology. A good example of a case where – with the benefit of hindsight – a more precautionary approach could be used is that relating to the decision regarding the use of CFCs; initially seen as an extremely beneficial substance, they were subsequently found to result in the depletion of the ozone layer. The cartoon slides at the end of this presentation could be used to provide an example of this.

Highlight the fact that the precautionary approach is founded by the common-sense advice to "err on the side of caution." Note that in the past we have tended to assume that industrial emissions are "innocent until proven guilty" of causing any harm to the environmental. The precautionary principle suggests that some emissions should be considered "guilty by virtue of their nature", and that as such every attempt should be made to reduce these, even where there is no proof of them having a negative effect on the environment and health.

Essentially, the precautionary approach is seen as a 'better safe than sorry' principle that focuses on the benefits of prevention rather than cure, particularly in the context of potentially irreversible environmental damage. As such, effective application of the precautionary approach may often result in economic savings, for example in terms of reduced liabilities and clean-up costs and through improved resource efficiencies. However, at times, full application of the principle may also result in some significant costs for a company, particularly over the short-term, which is one of the reasons why a number of sectoral business organisations have in the past resisted the adoption of the precautionary principle, preferring either to adopt reference to the precautionary approach or no reference at all.

Slide 6 The Wingspread Statement

After considering the approach outlined in the UN Rio declaration, it is suggested that you now ask the delegates to consider the implications of a more encompassing definition that was developed at a conference of prominent academics, NGOs, and government officials from Europe and North America (the so-called "Wingspread Declaration").

Read this definition to the class, placing emphasis on the last two sentences, which highlight the need for transparency and the need to examine the range of alternatives.

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are

not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."

1998 Wingspread Statement

NOTE: ***The above definition is intended for use as an exercise to examine Principle 7, and should not be seen as the basis of the Global Compact Principle.***

Slide 7 The Precautionary Approach: Key Elements

Using Principle 7 of the Rio Declaration and the Wingspread Statement as your basis, you should then identify the following key components of the definition: *(Note: it may be useful to have the two definitions written up beforehand on a flipchart so that you can cross-reference to them throughout the session)*

- ***Taking anticipatory action to prevent harm in the face of scientific uncertainty:*** Any activity should be evaluated based on the best available science. Knowledge gaps should be considered alongside existing information. Whenever possible, the timeframe for taking action should encourage preventing harm, before it occurs. One effective way of taking anticipatory action is to set policy goals, which aim to protect human health and the environment, and to work towards these goals over time. The duty to prevent harm is shared by the government, business and community groups, and the general public.
- ***Exploring alternatives, including the "no action" option:*** For most activities, a range of alternative products or actions is available. It makes sense to choose the action or product which causes the least harm. The alternative of "no action" should also be considered when assessing the various alternatives. When alternatives are not readily available, it is necessary to take this into account and to begin developing such alternatives.
- ***Considering the full cost of environmental and health impacts over time:*** Costs analysis should account for the full range of costs associated with a product or service over its life-cycle, including manufacturing, use and disposal. The intention is to provide a more integrated approach to analysis and decision-making.
- ***Increasing public participation in decision-making:*** Public participation in a democratic process ultimately results in a better decision. Also, when the full range of stakeholder viewpoints are incorporated into decision-making, the decision is more likely to be implemented as intended. Ensuring transparent, inclusive and open decision-making processes is essential to increasing public involvement. Public education about environmental and public health issues is needed to provide local residents with tools for evaluating alternatives. In order to reach a good decision, residents must be empowered to assess potential short- and long-term impacts for a range of alternatives.
- ***Shifting responsibility for providing evidence to proponents of an activity:*** This means that the proponent of an activity, process, new technology, chemical or product will bear the responsibility for providing evidence regarding its safety. This is in contrast to the traditional norm, which requires the public to provide evidence of harm. The proponent of an activity is, therefore, responsible for providing complete and accurate information on the potential

human health and environmental impacts of the activity, as well as monitoring the activity over time and disclosing this information to the public. The proponent of an activity is also responsible for costs incurred if an activity is not performed in a safe or healthy manner. Industry assurance bonds or reclamation bonds are one way to ensure funds are available for a cleanup.

Slide 8 A Business Approach

It can be argued that the precautionary approach is a useful business philosophy for two reasons:

- ***It makes sound business sense:*** Although preventing environmental damage entails both opportunity and implementation costs, remediating environmental harm can cost much more (e.g. treatment costs, company image).
- It also leads to innovation with long-term benefits:
  - Production methods that are not sustainable (i.e. that deplete resources and degrade the environment) have a lower, long-term return.
  - Improving environmental performance means less financial risk, an important consideration for insurers.
  - RandD related to the creation of more environmentally-friendly products can have significant long-term benefits.

Precaution involves the systematic application of risk assessment (hazard identification, hazard characterisation, appraisal of exposure and risk characterisation), risk management and risk communication. The key element of a precautionary approach, from a business perspective, is the idea that: *"Prevention is better than cure".* In other words it is more cost-effective to take early action to ensure that irreversible environmental damage does not occur than to try to remedy it once it has happened.

Slide 9 Managing Uncertainty

Nevertheless, interpretation of the precautionary approach can present difficulties for companies. They will better assess any potential harm if:

- They have a thorough understanding of current environmental impacts and of baseline environmental conditions within their sphere of influence.
- They have developed a life-cycle approach to business activities to manage uncertainty and ensure transparency.

Slide 10 Tools to assess uncertainty

With respect to assessing uncertainty and options for a precautionary approach, a number of useful tools are available to gather the necessary information on the potential issues and impacts associated with technological, process, planning and managerial changes. Explain that these are fleshed out in much more details in Session 2 of Module 4, but for now, a brief description is as follows:

- ***Environmental Risk Assessment*** – establishes the potential for unintended environmental damage alongside other risks.

- ***Life Cycle Assessment (LCA)*** – explores the opportunities for more environmentally benign inputs and outputs in product and process development.
- ***Environmental Impact Assessment*** – ensures that the impacts of development projects are within acceptable levels
- ***Strategic Environmental Assessment*** - ensures that impacts of policies and plans are taken into account and mitigated.

These tools provide the data that organisations need when deciding what actions to take.

Slide 11 Examples of precautionary activities

There are a number of activities that can form part of implementing a precautionary approach. These include:

- Building in safety margins when setting standards in areas where significant uncertainty still exists.
- Banning or restricting an activity whose impact on the environment is uncertain.
- Promoting Best Available Technologies.
- Implementing Cleaner Production and Industrial Ecology approaches.
- Communicating with stakeholders about risks.

Slide 12 The Precautionary Approach and the decision-making process

An underlying aim of this session is to provide delegates with a good understanding of the practical implications of the precautionary approach. What does it mean in the context of everyday business decision-making processes?

Building on the definitions provided in Principle 7 of the Rio Declaration and the 1998 Wingspread Statement it is suggested that a precautionary approach essentially encompasses five broad sets of activities. (Note: to enhance delegates' understanding of the practical implications of these activities, you should view these activities in the context of a particular decision by a company; see for example the accompanying case studies):

Take the delegates step-by-step through each of the following activities:

- The first step is to assess whether in fact a precautionary approach is required. This requires that the potentially *negative effects are identified*, and that the *scientific data relevant to these risks is evaluated*. The precautionary approach is only invoked when, due to the insufficiency of the data or their inconclusive or imprecise nature, it is impossible to determine the risk in question with sufficient certainty.

Once it has been decided on the basis of this evaluation that the precautionary approach is required, then it is suggested that the following precautionary activities should be implemented:

- Undertake an *assessment of all reasonable alternative options*, noting the environmental, health and economic costs and benefits of each approach, with the burden of proof of acceptable harm shifting onto the organisation whose activities raised suspicion of harm in the first place.
- Adopt *transparent, inclusive, and open decision-making processes* that involve interested parties in the study of the various risk management options.

- Implement an ongoing process of *research and monitoring*, with the decision/s periodically re-examined, based on any new available information.
- Implement the *proportionality principle*, such that the costs of action to prevent hazards are not disproportionate to the likely benefits in both the short and term.

Slide 13 Assessing when to invoke the precautionary approach

A critical first step in implementing the precautionary approach effectively within the corporate process is to assess whether the precautionary approach needs to be invoked in the context of a particular corporate decision. The European Commission provides useful guidance on this issues in the following statement:

> *"Whether or not to invoke the Precautionary Principle is a decision exercised where scientific information is insufficient, inconclusive, or uncertain and where there are indications that the possible effects on the environment, or human, animal or plant health may be potentially dangerous and inconsistent with the chosen level of protection."*

This issue needs to be addressed on a case-by-case basis. This raises the following key questions for a company:

- When is the available scientific information no longer "insufficient, inconclusive or uncertain"?
- What actions should the industry proponent take to provide assurance of this? Can you prove a negative?
- How (and who?) to judge the "acceptable" level of risk to society?

Some guidance on the practical implications of these questions is provided in the accompanying case studies. Providing useful answers to these questions is facilitated through effective application of a range of possible tools aimed at assessing uncertainty and addressing the associated potential risks. These are outlined in the following slide, and are explained in more detail in subsequent Modules.

Slide 14 Considerations relating to stakeholder engagement

Implementing an effective stakeholder engagement process is an important component of adopting a precautionary approach in a company, and is a critical part of the process of jointly defining an acceptable level of risk when confronted with complex issues (such as biotechnology) that often pose ethical dilemmas.

The following key considerations should guide a stakeholder engagement strategy. Discuss these with the delegates, and ask them to consider how these are being applied in their own operations.

- Significant potential for mutual benefits.
- Stakeholders should be viewed as potential assets and opportunities, rather than as liabilities and risks.
- Understand that public perceptions may be driven by feelings not facts, and that instinctive feelings matter.
- Continue to solicit input from stakeholders – and be adaptable.

- Unsatisfied stakeholders must not be dismissed – rather show that their demands may conflict with other legitimate stakeholder needs.
- Maintain effective communication with the media, recognising their interests in promoting a controversial story.

Slides 15-16 The Precautionary Approach: The case of CFCs

These cartoons can be used as part of a discussion on the implications for the precautionary approach of the experience with introducing CFCs, using as much of the information below as you see fit:

Despite many years of scientific research, our knowledge of environmental systems is still not sufficient to predict with certainty the effect of many human activities on the environment. The use of chlorofluorocarbons (CFCs) provides an example of how the hazardous nature of an activity can go unrecognised for many years, and raises interesting questions regarding the applications of the precautionary approach.

Initially heralded for their non-toxic, non-corrosive and non-flammable properties, CFCs were introduced in the 1940s (including uses in air conditioning units and as aerosol propellants). During the 1970s some experts predicted that emissions of CFCs persisting in the atmosphere could lead to damaging ozone depletion in the stratosphere. The first observation of ozone depletion over the Antarctic was not reported until 1985. The Montreal Protocol (www.unep.org/ozone/index asp) was signed in 1987, resulting in the phasing-out of the use of CFCs – nearly 50 years after their introduction.

Initially some policy-makers and business groups questioned the need to stop using CFCs, arguing that there should be greater scientific certainty to show that it caused harm before production should be halted. In terms of the precautionary approach, however, "*where there are threats of serious or irreversible damage, lack of full scientific certainty (should) not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*" (Rio Declaration).

Full implementation of the precautionary approach would have suggested that – in the context of serious damage (arguably the case with CFCs and the ozone hole) – companies and regulators should not have waited until there was greater scientific certainty before acting. In terms of the precautionary approach, all available alternatives should be assessed, and the burden of proof of safety should be shifted onto the proponent/s of a potentially harmful activity. This new approach harnesses scientific uncertainty to protect the environment and human health, but also demands a reduced pace of innovation, requiring careful consideration of possible future consequences.

Following the CFCs incident, a number of environmental NGOs (such as Greenpeace) have called for applying the precautionary principle to *all* chlorine-based compounds, arguing that their existing uses should be phased out, and prohibiting new uses unless they can be proven to be perfectly safe.

It is important to emphasise that the precautionary approach can have profound implications for "business as usual" (i.e. growth and innovation at any cost). For example, requiring companies to

systematically assess alternatives would by itself affect current innovation activities. An effective assessment of alternatives requires an evaluation of what the activity is trying to achieve and how to identify the least-damaging way of accomplishing this. It also requires us to consider whether we might we be better off without the particular innovation.

Slide 17-18 The Precautionary Approach: Practical Implications

To ensure the effective adoption and implementation of the precautionary approach within relevant corporate decision-making activities, it is suggested that the following activities should be undertaken by a company that has committed itself to the precautionary approach:

- Ensure top management understanding of the implications of the principle and ensure a visible commitment to this.
- Develop and implement a code of conduct with a commitment to health and environment.
- Develop and implement company guidelines and procedures aimed at ensuring the consistent application of the approach throughout the company.
- Ensure that an existing (or if necessary new) managerial committee or steering group oversees the company's application of the precaution approach, with a particular focus on risk management activities relating to sensitive issues.
- Implement a structured stakeholder engagement process aimed at ensuring effective communication of information regarding uncertainties and potential risks; make use of mechanisms such as multi-stakeholder meetings, workshop discussions, focus groups and public polls combined with use of website and printed media.
- Undertake and provide support to independent scientific research on the issue involved, working with relevant national and international institutions.
- Join industry-wide collaborative efforts to share knowledge and deal with issues relating to production processes/products around which high levels of uncertainty, potential harm and sensitivity exist.
- In the context of a contentious project decision that needs to be taken, implement the decision-making steps outlined earlier.

Slide 19 The Precautionary Approach: Final Thought

The aim of this final slide is to highlight the potentially significant implications for business of implementing the precautionary approach to its full extent. This final slide builds on the discussion outlined earlier relating to the use of CFCs.

Exercise 3.1 – The precautionary approach in practice

1. **The precautionary approach places the burden of proof on a company to demonstrate that its activity or technology is not harmful to the environment. Consider this statement in the context of a recent (potentially controversial) specific decision/activity in your own company/industry and discuss this in your group. In doing so, revisit some of the questions raised in the Sasol case studies. Consider also the following:**
   - **Do you think the approach that Sasol took represents effective implementation of the "precautionary approach"? If not, then why not?**

- **What other measures should the company have taken on this issue?**

2. **With reference to case study 3-2 (BT) and 3-3 (Aracruz), consider the following:**
   - **Who are the primary stakeholders in this situation? Draw up a list and identify their main interests on this issue.**
   - **Do you think the approach that the company took on this issue represents effective implementation of the "precautionary approach"?**
   - **If not, then why not?**
   - **What other measures should the company have taken on this issue?**
   - **Has your company faced similar situations in the recent past (or perhaps it faces such a situation at present?) If so, how has your company responded? On the basis of the case studies presented here, do you think that the response should have been different? Share your thoughts on this issue with the other participants.**

For both of the above studies, as trainer you should encourage some good discussion amongst the participants, with the aim of critically evaluating the full implications of the precautionary approach and some frank reflection on how their respective companies have responded in similar situations. Consider the company responses in the context of the issues raised on slides 17 and 18.

In the context of stakeholder engagement processes, it is useful to consider the following general lessons (see slide 14):

- At a general level, while it is acknowledged that stakeholder engagement processes may be time consuming and resource intensive, there is nevertheless seen to be significant potential for mutual benefits; for these to materialise it is important to see stakeholders as potential assets and opportunities, rather than as liabilities and risks.
- The public often makes judgements based on perceptions, rather than on what may be perceived as "sound science." Taking the initiative with effective and transparent communication can help to narrow the gap between perceptions and fact.
- It is important to continue to solicit input from stakeholders and to be adaptable to possible changes in stakeholder demands. Stakeholder concerns should be reviewed regularly, with any associated action plans adapted as required.
- There are almost always going to be stakeholders who are unsatisfied with the proposed outcome. It is important that these stakeholders are not dismissed, but rather that efforts are taken to illustrate, in a non-patronising manner, how their demands might conflict with other legitimate stakeholder needs.
- In a project of this nature, ongoing and appropriate communication with the media should be maintained. They should be kept informed in an open and friendly manner, minimising any potential for perceived technological arrogance.
- It is important to build networks and to promote the leverage of knowledge, resources and expertise both within the company, as well as externally, including in particular with industry associations.

3. **At times, full implementation of the precautionary approach may mean that a company will have to halt an otherwise profitable business venture. In this regard, some companies may draw attention to the "proportionality principle" in terms of which "the costs of action**

to prevent hazards should not be disproportionate to the likely benefits in both the short and long term." (European Commission; 2000). Similarly, it has been argued that "to deny consumers the benefits of innovative, beneficial products while forcing companies to prove the impossible – that their product is completely safe and absolutely risk free – is a prescription for disaster." (American Council on Science and Health; 1998).

However, other more cautious observers may wish to recall the experience of CFCs. Once praised for the significant benefits they were seen to deliver with lower risk to the then current alternatives, they were subsequently found to damage the ozone layer with important resulting environmental and health implications.

Consider the above arguments in the context of a similar decision that your company may be facing. What do you think is reasonable for a company to do? When does implementation of the precautionary approach become the responsibility mainly of government?

It is important here to prompt further reflection on the full implications of the precautionary principle, and to appreciated that it can have profound implications for "business as usual" (i.e. growth and innovation at any cost). For example, requiring companies to systematically assess alternatives would by itself affect current innovation activities. An effective assessment of alternatives requires an evaluation of what the activity is trying to achieve and how to identify the least-damaging way of accomplishing this. It also requires consideration as to whether we might be better off without the particular innovation.

As the Sasol and CFC case studies demonstrate, full implementation of the precautionary approach raises some important questions that may be very controversial to answer as an individual company (see slide 13):

- When is the available scientific information no longer "insufficient, inconclusive or uncertain"?
- What actions should the industry proponent take to provide assurance of this? Can you prove a negative?
- How (and who?) should judge the "acceptable" level of risk to society?

Encourage the delegates to share their views on these issues. Ask them if possible to provide examples of particular situations that they may have faced where

i) The company should have implemented a more precautionary approach
ii) It may be seen as unreasonable to expect the company to do more than they have done, and that carrying some degree of residual risk is a better option that trying to shift the burden entirely on the company to prove no risk

It may be useful in this regard to ask the delegates to share their views regarding the current debates associated with genetically modified organisms.

The response of Boots (a UK-based retail pharmacy chain) to the use of CFCs in aerosols

"In the early 1980s, the ozone depletion theory was still in its infancy and was not generally accepted. One brand owner found this to their cost when attempting to relaunch their reformulated market leader antiperspirant as CFC-free. Consumers reaction to the revised product was so poor that it had to be withdrawn from the market within weeks. The brand owner concluded that, despite the question marks surrounding the role of CFCs in depleting the ozone layer, a precautionary approach should be taken. Boots, however, tackled the issue differently.

Through careful formulation, it was initially possible to reduce the amount of CFCs per product use by 70% on average (and 100% in some types of products) while still ensuring that the product continued to be acceptable to the consumer.

A lesson here, maybe, is that it is sometimes more effective to take a phased approach to removing a particular ingredient and retain customer satisfaction. As the case against CFCs grew stronger, a new generation of CFC-free products was developed, well in advance of any legal requirements."

www.boots-plc.com/environment/

4. **Read the attached extract from Boots' website and consider the following questions:**
   - **What is the key lesson that you gain from this brief extract?**
   - **Do you think that Boots, in being "well in advance of any legal requirements" could nevertheless claim to be applying the precautionary approach?**

Checklist: Practical Implications of Principle 7

The following brief checklist is intended to provide general guidance to companies in assessing the extent to which they have effectively adopted and implemented the precautionary principle within relevant corporate decision-making activities

OPTION	Yes ✔	No ✖
1. Have you ensured top management understanding of the implications of the principle and ensured a visible commitment to this?		
2. Have you developed and implemented a code of conduct with a commitment to health/ environment?		
3. Have you ensured a thorough understanding of current environmental impact and baseline environmental conditions within your organisation's sphere of influence?		
4. Have you developed a life-cycle approach to business activities to manage uncertainty and ensure transparency?		
5. Have you developed and implemented company guidelines and procedures aimed at ensuring the consistent application of the approach throughout the company?		
6. Do these guidelines and procedures include the following provisions:		
Built in safety margins when setting standards in areas where significant uncertainty still exists.		
Banning or restricting an activity whose impact on the environment is uncertain.		
Promoting Best Available Technologies.		
Implementing Cleaner Production and Industrial Ecology approaches (refer to Module 4 for more on these).		
Communicating with stakeholders about risks.		
RandD related to the creation of more environmentally-friendly products, processes/ services that could have significant long-term benefits.		
7. Have you ensured that an existing (or if necessary a new) managerial committee or steering group oversees the company's application of the precaution approach, with a particular focus on risk management activities relating to sensitive issues?		
8. Have you implemented a structured stakeholder engagement process aimed at ensuring effective communication of information regarding uncertainties and potential risks; made use of mechanisms such as multi-stakeholder meetings, workshop discussions, focus groups and public polls combined with use of website and printed media? The following key considerations should guide a stakeholder engagement strategy:		
Significant potential for mutual benefits.		
Stakeholders should be viewed as potential assets and opportunities, rather than as liabilities and risks		
Understand that public perceptions may be driven by feelings not facts, and that instinctive feelings matter (the experience of Shell over Brant Spar is particularly relevant here).		
Continue to solicit input from stakeholders - and be adaptable.		
Unsatisfied stakeholders must not be dismissed - rather show that their demands may conflict with other legitimate stakeholder needs		
Maintain effective communication with the media, recognising their interests in promoting a controversial story.		
9. Have you undertaken and provided support to independent scientific research on the issue involved, working with relevant national and international institutions? The responsibility for providing evidence lies with your organisation:		
Your organisation, as the proponent of an activity, process, new technology, chemical or product will bear the responsibility for providing evidence regarding its safety. This is in contrast to the current norm, which requires the public to provide evidence of harm.		

OPTION	Yes ✔	No ✖
Your organisation is, therefore, responsible for providing complete and accurate information on the potential human health and environmental impacts of the activity, as well as monitoring the activity over time and disclosing this information to the public.		
Your organisation is also responsible for costs incurred, if an activity is not performed in a safe or healthy manner. Industry assurance bonds or reclamation bonds are one way to ensure funds are available for a cleanup.		
10. Have you joined industry-wide collaborative efforts to share knowledge and deal with issues relating to production processes/products around which high levels of uncertainty, potential harm and sensitivity exist?		
11. In the context of a contentious project decision that needs to be taken, have you implemented these decision-making steps:		
The first step is to assess whether in fact a precautionary approach is required. This requires that the potentially *negative effects are identified*, and that the *scientific data relevant to these risks is evaluated*. The precautionary approach is only invoked when, due to the insufficiency of the data or their inconclusive or imprecise nature, it is impossible to determine the risk in question with sufficient certainty. Once it has been decided on the basis of this evaluation that the precautionary approach is required, then it is suggested that the following precautionary activities should be implemented:		
1) Undertake an *assessment of the alternative options*, noting the environmental, health and economic costs and benefits of each approach (consider using the available tools). Guiding principles include:		
Take anticipatory action to prevent harm in the face of scientific uncertainty.		
Explore alternatives, including the alternative of "no action": For most activities, a range of alternative products or actions is available. It makes sense to choose the action or product that causes the least harm. The alternative of "no action" should also be considered when assessing the various alternatives. When alternatives are not readily available, it is necessary to take this into account and to begin developing such alternatives.		
Apply *risk assessment* systematically (hazard identification, hazard characterisation, appraisal of exposure and risk characterisation), risk management and risk communication.		
To help in decision-making, consider the following useful *tools* for gathering the necessary information on the potential issues and impacts associated with technological, process, planning and/or managerial changes (refer to Module 4 for more on each tool):		
Environmental Risk Assessment – establishes the potential for unintended environmental damage alongside other risks.		
Life Cycle Assessment (LCA) – explores the opportunities for more environmentally benign inputs and outputs in product and process development.		
Environmental Impact Assessment – ensures that the impacts of development projects are within acceptable levels.		
Strategic Environmental Assessment - ensures that impacts of policies and plans are taken into account and mitigated		
2) Adopt a *transparent, inclusive, and open decision-making processes* that involves interested parties in the study of the various risk management options. Guiding principles:		
Increase public participation in decision-making:		
Ensure transparent, inclusive and open decision-making processes, as they are essential to increasing public involvement.		
Provide public education about environmental and public health issues to local residents so they can evaluate alternatives.		

OPTION	Yes ✔	No ✖
In order to reach a good decision, residents must be empowered to assess potential short- and long-term impacts for a range of alternatives.		
3) Implement an ongoing process of *research and monitoring*, with the decision/s periodically re-examined, based on any new available information.		
4) Implement the *proportionality principle*, such that the costs of action to prevent hazards are not disproportionate to the likely benefits in both the short and term.		

MODULE 3: UNDERSTANDING THE UNGC ENVIRONMENTAL PRINCIPLES

Session 2: Principle 8 – Environmental Responsibility

TIME: 3 Hours (suggestion only)

OBJECTIVES:

The objectives of this session are:

- To provide a sound understanding of the practical implications of implementing UNGC Principle 8 – environmental responsibility.
- To test this understanding through the use of case studies (note: these case studies are included separately in the accompanying Delegates' Manual.

SUGGESTED PROCEDURE:

The day before this session is scheduled encourage delegates to read one or more of then following (note: you should select which are the most appropriate depending on the nature of the delegates and their respective company activities):

- Case Study 3-4: Novo Nordisk
- Case Study 3-5: Yawal System – Poland
- Case Study 3-6: The Climate Neutral Network
- Case Study 3-7: Sonae: Delta Cafés socially responsible coffee
- Case Study 3-8: Washright Campaign
- Case Study 3-9: Adidas-Salomon
- Case Study 3-10: Funds-R-Us

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. Exercises 3-2, 3-3 and 3-4 should take approximately 45 minutes each.

Speaker's Notes

NOTE: ***The following slides should be read in conjunction with those provided in Module 4. You may wish to integrate a number of slides from Module 4 into this Module, depending on the nature and background of the delegates.***

Slide 1 **Title slide**

Slide 2 **Principle 8**

Read out the principle
Businesses should undertake initiatives to promote greater environmental responsibility.

As indicated in Module 2, despite progress in certain aspects of environmental performance, significant challenges remain if we are to address growing environmental concerns.

Given the increasingly central role of the private sector in global governance issues, the public is demanding that business manages its operations in a manner that not only enhances economic prosperity and promotes social justice, but also ensures environmental protection in the regions and countries where it is based.

Through Principle 8, the Global Compact provides a framework for business to make a meaningful contribution to addressing environmental concerns.

Slide 3 A Change of Approach

As outlined in more detail in Module 2, there are convincing reasons to believe that if we are to achieve environmental sustainability, then business may need to "rethink" a number of its activities. One way for business to demonstrate its commitment to greater environmental responsibility is by changing its *modus operandi* from the 'traditional methods' to a more responsible approach to addressing environmental issues. These include making the following transitions:

Inefficient resource use	⇒	**Resource productivity**
End-of-pipe technology	⇒	**Cleaner production**
Public relations	⇒	**Sound corporate governance**
Reactive	⇒	**Proactive**
Management systems	⇒	**Life-cycles, business design**
Passive communication	⇒	**Multi-stakeholder dialogue**
Linear/throughput approach	⇒	**Closed-loop approach**
Confidentiality	⇒	**Openness and transparency**

Slide 4 The shift towards Cleaner Production strategies

A schematic overview of the timing and nature of these general changes (and in particular the shift from end of pipe pollution control to cleaner production – as an example) is presented in this slide. Make the point that many of these approaches will be explained in greater detail in Session 2 of Module 4.

Slide 5 What environmental responsibility means for business

Chapter 30 of Agenda 21 suggests that for business, environmental responsibility entails:

> *"[the] responsible and ethical management of products and processes from the point of view of health, safety and environmental aspects"*

The 1992 Rio Earth Summit highlighted the fragility of the planet. The message to companies was

spelled out in Chapter 30 of Agenda 21, in which the role of business and industry in the sustainable development agenda is discussed.

On the 'responsible and ethical management of products and processes' from the point of view of health, safety and environment, it states:

"Towards this end, business and industry should increase self-regulation, guided by appropriate codes, charters and initiatives integrated into all elements of business planning and decision-making, and fostering openness and dialogue with employees and the public."

Slide 6 Integrating Environmental Responsibility into Business

In the decade since the Rio Summit, the imperative for business to conduct its activities in an environmentally responsible manner has not lessened. The Malmö Ministerial Declaration of May 2000 states that:

> *"A greater commitment by the private sector should be pursued to engender a new culture of environmental accountability through the application of the polluter-pays principle, environmental performance indicators and reporting, and the establishment of a precautionary approach in investment and technology decisions. This approach must be linked to the development of cleaner and more resource efficient technologies for a life-cycle economy and efforts to facilitate the transfer of environmentally sound technologies"*

This statement effectively expresses the links between the three Environmental Principles (7-9) of the UNGC. The Malmö Declaration also welcomed the Global Compact as 'an excellent vehicle for the development of constructive engagement with the private sector'.
Two years later, government heads called for greater 'corporate environmental and social responsibility and accountability' in the Johannesburg Declaration and Plan of Implementation of the 2002 World Summit on Sustainable Development.

It has become clear that, given the central role of the private sector in global governance issues, the public demands that corporations manage their operations in a manner that not only enhances economic prosperity and promotes social justice but also ensures environmental protection. Through Principle 8, the Global Compact provides a framework for business to take forward some of the key challenges made in Rio, and earlier at the 'Earth Summit' in Stockholm in 1972.

Slide 7 Business Case for Environmental Responsibility

A change in business strategy to more Environmentally Responsible business practices brings with it a number of benefits. The United Nations Environmental Programme (UNEP) has identified the following reasons why a company should consider improving its environmental performance:

- Improve resource productivity – for example through the application of cleaner production and eco-efficiency measures.

- Companies are being rewarded by responding appropriately to economic instruments, such as taxes, charges, and trade permits.
- Environmental regulations are becoming tougher.
- Favourable insurance cover for lower risk ('cleaner') companies.
- Easier lending terms from banks.
- Positive effect on a company's image.
- Prospective employees tend to prefer working for an environmentally responsible company.
- Environmental pollution threatens human health.
- Customers are demanding cleaner products – environmental aspects of products and processes playing an increasing role in competitiveness.
- Fear of international trade barriers formed by new standards for environmental performance.
- Effective environmental management can reduce liabilities.

You may also refer to the slides used in Module 2.

Slide 8 Characteristics of Environmental Responsibility

It is suggested that before listing these characteristics you ask the delegates to identify what they understand to constitute important characteristics of environmental responsibility. Keep a record of their inputs on a flip chart, and then compare them with the following suggested characteristics:

- applying a precautionary approach (see principle 7);
- adopt the same operating standards regardless of location;
- integrating environmental considerations through the supply-chain;
- facilitating transfer of environmental technology (see principle 9);
- contributing to environmental awareness in company locations, and
- communicating openly with the local community.

Slide 9 Checklist of good governance

The table included in this slide comes from a recent report by CERES and the Investor Responsibility Research Centre that examines the interface between climate change management and good corporate governance practice. The table is useful in providing a checklist of good governance activities (similar to those outlined in the previous slide) that companies can adopt with the aim of effectively integrating environmental responsibility on a specific issue within their core business activities.

The report identifies 14 specific actions that companies are taking to implement governance responses to climate change. Although the focus of the report is specifically on climate change it provides a useful example of the kinds of governance activities that leading companies are implementing on significant environmental issues.

Slide 10 Obtaining management commitment for environmental responsibility

An important underlying requirement for environmental responsibility to be driven effectively within a company is for there to be senior management commitment. You should ask the delegates to consider the following series of questions and to write down the answers in their workbooks. The

aim of these queries is for delegates to start considering what the key environmental issues are for their companies, and who has (or should have) responsibility for managing them.

- Who in the company currently has authority to issue policies and strategies?
- Who has responsibility for environmental issues at the most senior level?
- What are the most critical environmental issues facing the company?
- What are the main risks and opportunities associated with these issues?
- Which line managers are most directly affected by these issues?
- Have you quantified the financial implications of the risks/opportunities?
- What are the resource implications of addressing the risks/opportunities?
- What further information is needed to develop an environmental plan?

Slide 11 Tools for Corporate Environmental Responsibility

For ease of reference, the range of environmental tools available to companies wishing to promote greater environmental responsibility has been divided into the following categories:

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

Point out that in Module 4, Session 1, you will be assessing these tools in more detail from a broad management framework perspective, during which you will address the question of '*which tool to use and when?'*

The aim at this stage is to simply list some of the tools that are available within each subset. In Module 4, Session 2, each of these will be examined in more detail, and in most instances will be illustrated by means of practical case studies.

Slide 12 Environmental Management Tools

Draw the delegates' attention to the following examples of environmental management tools. You should be familiar with each of these and prepared to explain each of them in a little more detail. Note also that they will be fleshed out in Module 4 later in the course.

- *Environmental Management Systems (ISO 14001, EMAS, etc.)*
  An Environmental Management System (EMS) is a planned and co-ordinated set of management actions, operating procedures, documentation and record-keeping, implemented by a specific organisational structure with defined responsibilities, accountabilities and resources, and aimed at the prevention of adverse environmental impacts as well as the promotion of actions and activities that preserve and/or enhance environmental quality.
  Environmental management systems can help companies to approach environmental issues systematically and to integrate environmental care as normal part of their operations and business strategy.

- *Environmental Management Strategies:*
  Introduce delegates to the following types of environmental management strategies:
  - Cleaner Production (including eco-efficiency) and Sustainable Consumption;
  - Life-cycle management;
  - Design for the Environment (DfE)/ Eco-design;
  - Product stewardship activities;
  - Product-services systems, and
  - Industrial ecology.

  Explain that CP/SCP, DfE, training and communication, product stewardship and industrial ecology are environmental responsibility strategies that can be identified for a company (as part of or external to a management system).

  An environmental strategy and policy is a starting point for businesses to integrate environmental aspects into their operations. Tools to ensure systematic attention and the achievement of policy and objectives include, among others: environmental management systems and environmental auditing/assessments. These help control and improve the environmental performance in line with the company environmental policy.

  Additional tools – such as environmental life-cycle assessment, total cost assessment, environmental impact assessment – help the company with decision-making on environmental management issues.

Slide 13 Business Benefits of Environmental Management Tools

An environmental management system is intended to help companies to:

- Identify and control the environmental aspects, impacts and risks relevant to the organisation.
- Achieve environmental policy, objectives and targets, including compliance with environmental legislation.
- Define a basic set of principles that guide your organisation's approach to its environmental responsibilities in the future.
- Establish short medium and long-term goals for environmental performance, making sure to balance costs and benefits, for the organisation and for its various shareholders and stakeholders.
- Determine what resources are needed to achieve those goals, assign responsibility for them and commit the necessary resources.
- Define and document specific tasks, responsibilities, authorities and procedures to ensure that every employee acts in the course of their daily work to help minimise or eliminate the enterprise's negative impact on the environment.
- Communicate these throughout the organisation, and train people to effectively fulfil their responsibilities.
- Measure performance against pre-agreed standards and goals, and modify the approach as necessary.

NOTE: ***Additional details on key aspects of EMS are provided in Module 4.***

Slide 14 Environmental Assessment Tools

Draw the delegates' attention to the following examples of environmental assessment tools. You should be familiar with each of these and prepared to explain each of them in a little more detail. (Look at Module 4 for details)

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

Slide 15 Business Benefits of Environmental Assessment Tools

Environmental issues have increasingly important implications for enterprises and other organisations. Depending upon how an enterprise or other organisation reacts, environmental concerns can positively or negatively affect the extent to which the organisation achieves its goals. The natural environment presents risks as well as opportunities. Successful enterprises increasingly are trying to manage these risks and opportunities. They do this for at least 2 main reasons: either to save money, by lowering costs and reducing exposure to liabilities, or to make money, by expanding market share or accessing new markets.

An environmental **risk** might be contamination of a product to the extent that it is unacceptable for foreign markets, injury or illness of workers or local communities, or a pollution problem which undermines the position of the enterprise in the national or international market.

An environmental **opportunity** might be the reduction of energy and resource consumption and therefore the costs of production (by reducing pollution or recycling wastes), or it might involve selling the product to a market which imposes environmental requirements.

Enterprises throughout the world are introducing Environmental Management Systems to manage environmental risks and opportunities more systematically and efficiently and use Environmental Assessment Tools to help to identify the risks and opportunities for their organisation.

Slide 16 Environmental Monitoring and Auditing Tools

Similarly environmental monitoring and auditing tools can be used by an organisation to assess the status of environmental performance, particularly to identify environmental aspects and impacts of processes against objectives and targets.

Draw the delegates' attention to the following examples of environmental monitoring and auditing tools. You should be familiar with each of these and prepared to explain each of them in a little more detail. (Look at Module 4 for details).

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

Slide 17 Business Benefits of Auditing and Monitoring Tools

Environmental auditing tools help a company to:

- Assess the status of environmental reporting, management and performance.
- Identify environmental aspects and impacts of processes and products.
- Gather and analyse information for sustainability reporting.
- Determine key performance indicators and monitor against objectives and targets.

Slide 18 Environmental Reporting and Communication Tools

Draw the delegates' attention to the following examples of environmental assessment tools. You should be familiar with each of these and prepared to explain each of them in a little more detail. (Look at Module 4 for details)

- Corporate Environmental / Sustainability Reports
- Ecological Footprints
- Stakeholder Engagement Activities
- Developing Partnerships for Progress
- Environmental Labelling Programmes

A programme of internal communication within an organisation will form part of the EMS. In addition to this, it is necessary to consider the external communication of the enterprise. External communication is an essential element of an EMS, but not all the aspects dealing with external communication have been taken into account in the standards on EMS. Environmental Reporting is a very useful tool, which is still (largely) left to the discretion of the enterprise to be used or to be disregarded. Other options that may benefit the enterprise in external communication activities include stakeholder engagement activities, partnerships and environmental labelling programmes (examined in more detail in Module 4).

Exercise 3.2 – Environmental responsibility in practice

1. **Slide 3 identified a number of changes in management approach that are generally required if environmental responsibility is to be embedded in a meaningful manner within a company's activities. For each of these proposed changes, try and identify some current activities in your company that reflect both the left hand column and the right hand column. Share and discuss these with your group. Are there examples of activities that others have identified that you could implement in your company?**

Inefficient resource use	⇒	**Resource productivity**
End-of-pipe technology	⇒	**Cleaner production**
Public relations	⇒	**Sound corporate governance**
Reactive	⇒	**Proactive**
Management systems	⇒	**Life-cycles, business design**
Passive communication	⇒	**Multi-stakeholder dialogue**
Linear/throughput approach	⇒	**Closed-loop approach**
Confidentiality	⇒	**Openness and transparency**

Encourage the delegates to think carefully through their current activities and as far as possible to identify activities that represent both columns, and to share their experiences with each other. In looking through each of the above options, they should also consider the opportunities for integrating environmental sustainability criteria into:

- Product design and development.
- The manufacturing process.
- Company branding.
- Packaging.
- Product pricing.
- Distribution activities.
- Advertising, sales promotion, PR.

2. **Drawing on your own experiences, discuss the available mechanisms for raising awareness of environmentally responsible practice in your business/industry. Discuss this in your group, draw up a shortlist and report back to the class.**

In the discussion, encourage delegates to consider the following:

- Examples of awareness-raising both internally and externally.
- Leading by example and informing, entertaining, analysing and educating differently.
- The use of different vehicles for awareness-raising include:
  - Sustainability reports.
  - Company website (inter/intranet).
  - Company newsletter.
  - Product information (eg. product declarations and eco-labels).
  - Consumer surveys and panels.
  - Stakeholder dialogue.

Delegates should be encouraged to consider the extent to which these information and awareness-raising activities are a genuine and honest reflection of current activities, or whether they are being used for window dressing?

Exercise 3.3 – Reviewing the case studies

1. **What would you consider as being the key to the success of the sustainability initiative described in case study 3-4? If you were to launch a similar initiative in your company, what would your suggestions for actions list include? Discuss in groups and report back to the class.**
   Allow for free discussion and sharing of ideas on this exercise.

2. **With reference to case study 3-4, what do you see as being the main reasons for the success of these initiatives? Do you think your company could carry out a similar set of actions with a similar degree of success. If not, why not? Carry out this exercise on your own. Some delegates may be requested to report back to the class.**
   Clearly, the benefits of the shared beliefs of management, along with workforce support are at

the forefront of this company's success. The use of tools such as EMS and audit instruments has clearly been beneficial.

Allow delegates time to consider the various barriers to change (with respect to any CP measures, process or technology changes, communication with authorities, etc).

3. **With reference to case study 3-6, do you see the potential for your company, services or products to become 'Climate Cool'. If yes, explain how you would go about this. Discuss in your group and report back to the class.**
   Allow for free discussion and sharing of ideas on this exercise.

4. **In groups, and with reference to case study 3-8, discuss what would be the key challenges/hurdles in such an initiative, particularly given the broad based target audience (Europe-wide). Look at how these could be overcome.**
   Delegates should identify at least some of the following in their discussions:
   - Support from authorities is critical with such an initiative; particularly if it takes the form of an official endorsement (e.g. joint announcement, use of resources etc).
   - Involvement of stakeholders and partners to convey the message (such as consumers associations) is important from the beginning of the project.
   - Importance of developing material recognisable and applicable to the whole of Europe. Note the inherent difficulties that this might create (appropriate visuals, translations etc).
   - Need to ensure that the message would remain the same throughout Europe and that no distortion would be made.
   - Ensuring no brand (or company) leverage would be made by using the Code visuals in some way.
   - The project would probably need consistent 're-launches' in order to maintain visibility.

Exercise 3.4 – Improving environmental performance

You are the recently appointed CEO of Funds-R-Us (Case Study 3-10). Faced with increasingly negative press about the various projects you support, you have to come up with appropriate guidelines to help improve FRUs image and corporate sustainability track record. In groups, come up with a list of up to eight key recommendations.

Following are some suggested considerations for FRU:

- Invest in projects that directly benefit local communities or lead to a minimum level of environmental or social benefit.
- Challenge private companies to invest in emerging sectors that provide public benefits such as renewable energy, sustainable agriculture, environmentally sound tourism, natural resource conservation and locally owned businesses (these sectors should be prioritised in FRU's portfolio).
- Invest in companies that demonstrate a commitment to corporate responsibility and have a track record of meeting high standards of social and environmental performance.
- Adopt a development screen that establishes clear development objectives to evaluate

whether or not projects will contribute positively to development. This would clarify the kinds of results FRU aims to achieve from their investments, elaborate for staff and clients how it measures development impact and reduce the time and resources spent on projects that do not match the organization's priorities for development results on the ground.

- Develop investment criteria through a consultative and participatory process that seeks input from a variety of stakeholders and civil society. The objectives could include, for example:
  - a project which generates long-term local employment
  - supporting women entrepreneurs
  - facilitating the transfer of environmental technology,
  - promoting investment in environmentally sound businesses
- FRU's policy framework should be expanded to include best practice standards from information disclosure to standards for the mining industry to consultation with local communities. This is particularly important if FRU wants to be in a position to challenge and lead the private sector to operate more responsibly.
- Assist commercial banks and private insurers in establishing environmental and social review standards and management systems for their investments.
- Improve information disclosure by clarifying the definition of business confidential information and allowing the public release of all project-related information, including information about projects that are financed through financial intermediaries.

Checklist: Practical Implications of Principle 8

The following brief checklist is intended to provide general guidance to companies in assessing the extent to which they have effectively integrated "environmental responsibility" within their corporate activities.

OPTION	Yes ✔	No ✖
12. Have you implemented a formal or informal environmental management system as a structured approach for effectively integrating environmental responsibility into core business practice?		
13. Have you identified and prioritised the various environmental aspects and impacts of the company. These may include (but are not limited to) a consideration of the following issues:		
Resource use (e.g. energy, water, and raw materials)		
Liquid effluent discharge		
Air pollution (including greenhouse gas emissions)		
Solid waste and hazardous substances management		
Noise and visual pollution		
14. Have you set objectives and targets based on impacts (these targets 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		

OPTION	Yes ✔	No ✖
15. Have you developed and communicated a corporate environmental strategy that is relevant to the activities of the company and that provides a clear basis for the development and implementation of the objectives and targets? Key elements of a responsible policy that contribute to Environmental Responsibility include		
Applying a precautionary approach		
Adopting the same operating standards regardless of location		
Ensuring supply-chain management		
Facilitating technology transfer		
Contributing to environmental awareness in company locations		
Communicating with the local community		
Promoting pollution prevention and cleaner production practices		
16. Have you ensured top management commitment and accountability? This may entail for example:		
Ensuring representation at Board level for environmental issues		
Assigning formal responsibilities to top management		
Identifying the affected persons and key issues by asking:		
Who in the company currently has authority to issue policies and strategies?		
Who has responsibility for environmental issues?		
What are the most critical environmental issues facing the company?		
What are the main risks and opportunities associated with these issues?		
Which line managers are most directly affected by these issues?		
Have you quantified the financial implications of the risks/opportunities?		
What are the resource implications of addressing the risks/opportunities?		
What further information is needed to develop an environmental plan?		
17. Have you developed and implemented procedures and guidelines aimed at assisting the company to achieve its specified objectives and targets?		
18. Have you developed sustainability indicators?		
19. Have you measured, audited, assessed and reported progress in the company's performance against these indicators? (Refer to assessment, auditing and reporting tools outlined below)		
20. Have you implemented incentives for employee environmental performance (for example including the achievement of performance objectives within the individuals' performance appraisal assessments)?		
21. Have you adopted relevant voluntary charters and codes of conduct (for example the Responsible Care Charter if a chemical company)?		
22. Have you included environmental considerations in supply chain management?		
23. Have you benchmarked your company against your peers?		
24. Do you have transparent and unbiased communication with stakeholders (refer to communication tools outlined below)?		

Make use of the following tools for Corporate Environmental Responsibility

OPTION	Yes ✔	No ✖
Environmental Management Tools		
1. Introduce an **Environmental Management Systems** (ISO 14001, EMAS, etc.) to manage environmental risks and opportunities more systematically and efficiently and to help your enterprise:		
Identify and control the environmental aspects, impacts and risks relevant to the organisation		
Achieve environmental policy, objectives and targets, including compliance with environmental legislation		
Define a basic set of principles that guide your organisation's approach to its environmental responsibilities in the future		
Establish short medium and long-term goals for environmental performance, making sure to balance costs and benefits, for the organisation and for its various shareholders and stakeholders		
Determine what resources are needed to achieve those goals, assign responsibility for them and commit the necessary resources		
Define and document specific tasks, responsibilities, authorities and procedures to ensure that every employee acts in the course of their daily work to help minimise or eliminate the enterprise's negative impact on the environment		
Communicate these throughout the organisation, and train people to effectively fulfil their responsibilities		
Measure performance against pre-agreed standards and goals, and modify the approach as necessary.		
2. **Environmental Management Strategies**:		
Cleaner Production, Sustainable Consumption and eco-efficiency		
Life-cycle management		
Design for the Environment/ Eco-design		
Product stewardship activities		
Product-services systems		
Industrial ecology		
3. Use **Environmental Assessment Tools** to help to identify the risks and opportunities for your organisation		
Environmental Impact Assessment (EIA)		
Environmental Risk Assessment (ERA)		
Cleaner Production Opportunity Assessments		
Environmental Technology Assessment (EnTA)		
Life-Cycle Assessment (LCA)		
Total Cost Assessment (TCA)		
4. Use **Environmental Measurement and Auditing Tools** including:		
Environmental Performance Indicators		
Environmental Auditing		
Pollution and Waste Audits		
Supply Chain Audits and Assessments		
Ecological Footprints		
5. Make use of the following **Environmental Reporting and Communication Tools** for internal and external communication with stakeholders:		
Corporate Environmental / Sustainability Reports		
Stakeholder Engagement Activities		
Developing Partnerships for Progress		
Environmental Labelling Programmes		

Summary of steps – an example for an existing process/product/service:

OPTION	Yes ✔	No ✖
1. Decide to manage environmental risks and opportunities by implementing an Environmental Management System.		
2. Develop a company policy and strategy that incorporates environmental responsibility. (e.g. Cleaner Production Strategy)		
3. The strategy chosen will encompass or lead to one or more of the following: environmental auditing, pollution and waste audits, supply chain audits and assessments, ecological footprint, and environmental performance indicators.		
4. The result of this will be the identification of options for improved environmental responsibility.		
5. These options may require more detailed assessments to assist decision makers on determining their feasibility and long-term sustainability- e.g. design for environment, life-cycle assessment, eco-efficiency, industrial ecology, total cost assessments, environmental impact assessment and/or environmental technology assessment.		
6. The results of these can then be communicated by reporting on your existing ecological footprint/ your existing environmental performance indicators together with a report on your identified options for improved environmental responsibility as a result of the decisions you made from the information identified by these tools.		
7. The benefits to the company will be to inform decisions 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.		

Summary of steps – an example for a new process/product/service:

OPTION	Yes ✔	No ✖
1. A new business idea can be developed using tools such as Design for Environment.		
2. To ensure the precautionary approach in adopting a new idea, it can be assessed using EIAs, LCAs, EnTAs, TCAs to determine the risks.		
3. The accepted new activity can then be implemented and operated according to the strategies of CP/eco-efficiency/industrial ecology.		
4. Once the business is up and running under an EMS, 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/etc).		
5. The EMS will help tie all the different aspects together by providing a structured approach		

MODULE 3: UNDERSTANDING THE UNGC ENVIRONMENTAL PRINCIPLES

Session 3: Principle 9 – Environmentally Friendly Technologies

TIME: 2 hours (suggestion only)

OBJECTIVES:

The objectives of this session are:

- to provide a sound understanding of the practical implications of implementing UNGC Principle 9 – environmentally friendly technologies, and
- to test this understanding through the use of case studies.

SUGGESTED PROCEDURE:

The day before this session is scheduled, encourage delegates to read one or more of the following case studies (note these case studies may also be used for Module 4):

- Case Study 3-11: Toyota (Global)
- Case Study 3-12: Columbian tannery (Curtigran Ltda)
- Case Study 3-13: CP in a Czech slaughterhouse
- Case Study 3-14: Nokia Mediamaster 110 T
- Case Study 3-15: Re-Define
- Case Study 3-16: BT wind powered buildings
- Case Study 3-17: Climatex Lifecycle
- Case Study 3-18: Ford Motor Company

(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 3-5 should take approximately 1 hour. The slides are available online at: http://www.unep.fr/outreach/compact/index.htm.

Allow a maximum of 15 minutes for questions and discussion at the end of the session.

Speaker's Notes

Slide 1 **Title slide**

Slide 2 **Principle 9**

Read out the principle

Businesses should encourage the development and diffusion of environmentally friendly technologies.

Mention here that the terms environmentally friendly and environmentally sound technologies are interchangeable, the former being the more colloquial and commonly used term.

Slide 3 A Definition of Environmentally Sound Technology (EST)

Environmentally sound technologies are those which –

> *" … protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes. ESTs are not just individual technologies, but total systems which include know-how, procedures, goods and services, and equipment as well as organisational and managerial processes."*

It is important that you point out here that this broad definition not only includes end-of-pipe (EOP) and monitoring techniques but also those practices that *explicitly encourage* more progressive preventative approaches such as Cleaner Production (CP) technologies.

EOP wastewater treatment technologies could, for example, be considered as an environmentally sound technology, but this should be so only after all efforts have been implemented to minimise the wastewater contamination and volume in the first place, and after every effort has been made for re-use/recycling of the treated water and/or contaminant in another process with the aim of 'closing-the-loop' as far as possible. In other words, a simple end-of-pipe treatment technology may be considered an EST but should be part of a preventative approach of the business (such as CP/eco-efficiency), rather than a technology on its own. The aim is to move away from the 'react and treat' approach to a more proactive 'anticipate and prevent' approach when it comes to selecting technologies for your company.

For this reason, there is a strong emphasis on preventative technologies and processes. Other environmentally friendly technologies (relating for example to the minimisation of parts for a product, cradle-to-grave assessment and consequent re-design, increased use of renewable energy through creative building design, and so on) will be explored in the various case studies.

Slide 4 ESTs: A long term challenge

Encouraging the development and diffusion of environmentally sound technologies is a longer-term challenge for a company that will draw both on the management and the research capabilities of the organisation (depending of course on the size and nature of the company's activities).

Environmentally sound technologies may be seen to comprise:

- Organisational and managerial processes such as:
  - Cleaner production
  - Eco-efficiency
  - Industrial ecology (technologies that allow the waste from one factory to be used by another)

- Specific technologies, goods and services, and equipment such as:
  - End-of-pipe (EOP) treatment technologies
  - Renewable energy sources
  - Alternative production processes that are less polluting and/or more resource efficient
  - Closed-loop systems

Engagement with Principle 9 will depend to some extent on the size and nature of the business. However all companies should strive to pursue the business benefits that come from a more efficient use of resources.

As this principle captures both 'hard' technologies and 'soft' systems the potential entry points are broad. Many existing technologies can become more 'environmentally sound' by changing the management and operation practices associated with the technology – for example implementing stricter control measures or changing washing procedures to minimise waste ('soft').

It is not necessary to assume that environmental responsibility will involve the purchase of new environmentally sound ('hard') technologies. Strategies such as CP, eco-efficiency and industrial ecology allow the business to identify all techniques aimed at minimising environmental impacts of existing processes that may include the adaptation of existing technologies or the purchase of new technologies. Module 4 will address CP, eco-efficiency and industrial ecology in more detail.
The decision regarding which alternative technology to use for an existing or new process can be assisted by undertaking an Environmental Technology Assessment (EnTA). More detail on this is also included in Module 4.

Slide 5 How ESTs are achieved

ESTs (adaptation of existing technologies or the purchase of new technologies) may be achieved as a result of a business decision to improve the environmental performance of a process at a basic factory site or unit level, by five principle means:

- Changing the nature of raw material and energy inputs
- Changing the organisation and management practices
- Changing the process or manufacturing technique and/or equipment
- Reducing, recycling and/or reusing waste materials (internally and externally)
- Introducing changes to the product and/or packaging design

Each of these steps is outlined in more detail in the accompanying diagram (slide 6).

Cleaner Production Assessments can be used to assess the opportunities for ESTs at factory level. CP is addressed in more detail in Module 4.

Slide 7 The Business Case for ESTs

Effective use of ESTs enables business to realise both environmental and economic benefits.
The potential ***economic benefits*** associated with ESTs include:

- Reduced raw material, energy and water costs
- Reduced waste disposal and transportation costs
- Increased returns by selling waste materials for reuse

- Reduced potential liabilities, risks and accidents
- Potential marketing benefits (improved corporate image)
- Improved employee morale, recruitment, retention and productivity
- Increased innovation

Potential ***environmental benefits*** associated with ESTs include:

- Reduced use of finite resources
- Reduced quantity of waste and effluent generated
- Reduced noise and air pollution
- Reduced transportation of waste
- Improved working conditions

In this session, point out that since ESTs generate less waste and residues, the continued use of inefficient technologies can represent increased operating costs for business. In addition, it results in a retrospective focus on control and remediation rather than on prevention. In contrast, the avoidance of environmental impacts through pollution prevention and ecological product design increases efficiency and overall competitiveness of the company and may also lead to new business opportunities. As ESTs reduce operating inefficiencies they also lead to lower occupational exposure levels and pollution emission, and contribute to reduced rates of accidents.

Slide 8 Strategic level approaches to ESTs

To encourage the use of environmentally sound technologies they should be included in the company policy. Therefore, information on their environmental performance and the associated cost benefits should be provided and partnerships between suppliers and contractors that use these technologies should be created.

In order to introduce ESTs, a company will need to consider all or some of the following options:

- Establish a corporate or individual company policy on the use of ESTs.
- Increase internal awareness of the benefits of ESTs.
- Improve company culture and practices to facilitate ESTs.
- Refocus research and development towards design for sustainability.
- Benchmark against Best Available Technologies.
- Identify alternative ESTs.
- Introduce life cycle assessment (LCA) in the development of new technologies and products, so as to take into account impacts in manufacture, use and at the end of life of the product.
- Employ Environmental Technology Assessment (EnTA) - an analytical tool designed to assist the sustainability decision-making processes related to technology adaptation, implementation and use.
- Examine investment criteria and the sourcing policy for suppliers and contractors to ensure that tenders stipulate minimum environmental criteria.
- Co-operate with industry partners to ensure that 'best available technology' is available to other organisations.
- Make information available to stakeholders that illustrate the environmental performance and benefits of using ESTs.

Slide 9 Environmental tools for assessing ESTs

Sometimes the environmental, human health and safety impacts of a proposed technology investment are overlooked by those advocating the use of a new or upgraded technology. An important aspect is the ability to recognise the most appropriate ("cleaner") technology among all the options under consideration. Without an appropriate method for evaluating technology options in terms of their environmental and related impacts, the process of implementing a process technology may not result in the best environmental and related outcomes.

ESTs encompass technologies that have the potential for significantly improved environmental performance relative to other technologies. Such technologies are the total systems that include know-how, technical procedures, goods and services, equipment, and organisational and managerial procedures. In order to make the best use of ESTs, there is a need to increase our ability to assess, analyse and choose technologies based on our own needs and development priorities, and then adapt these technologies to specific local conditions.

There are a number of tools that can be used to assess ESTs. The table below provides an overview of some key assessment tools.

Aspect	Environmental Technology Assessment (EnTA)	Environmental Impact Assessment (EIA)	Environmental Risk Assessment (ERA)	Life Cycle Assessment (LCA)
Purpose	Assesses implications of a technology and guides choices of technology	Identifies and predicts the environmental impacts of a project, policy or similar initiative; provides basis for decision on acceptability of the likely impacts	Risks to the environment and public health are estimated and compared in order to determine the environmental consequences of the initiative under consideration	Evaluates the environmental burdens associated with a product, process or activity, explicitly over the entire life cycle
Initiator	Proponent of technology; investor; stakeholders who may be impacted	Applicant for regulatory approval	Proponent of project or other initiative; investor; stakeholders who may be impacted	Proponent of project or other initiative; investor; stakeholders who may be impacted
Timing	Scoping tool at the pre-investment stage, before the development of a formal/full proposal	Prior to decision whether or not the initiative should proceed	At any time, as determined by the initiator	At any time, as determined by the initiato
Regulatory Status	None – often used to screen options before more detailed assessment	Often required under environmental protection legislation, especially for larger projects or for proposed projects in environmentally sensitive areas	None – may be used to give support to conclusions of assessments required by law	None – typically used by producers or consumers to assess the environmental merit of the product, process or activity

Source: The Assessment, Transfer and Uptake of Environmentally Sound Technologies: Background to and Overview of Environmental Technology Assessment (EnTA), John E. Hay, UNEP/DTIE/IETC

Each assessment tool can in fact complement the other tools, helping to focus the different phases of the assessment, and thereby promoting a better understanding of the effect a technology has upon the environment. Not included in the above table is Cleaner Production Assessment – this is covered in slides 4 and 5. Each assessment tool is covered in more detail in Module 4.

Slide 10 Further Information on ESTs

Module 4 will provide further information on the assessment tools. This slide provides an overview of additional information sources on ESTs.

- *UNEP International Environment Technology Centre* - http://www.unep.or.jp/ This UNEP website provides an introduction to EST, a searchable directory and related links, such as *MaESTro* - http://www.unep.or.jp/maestro2/ MaESTro is an information tool which contains information on a full range of environmentally sound technologies, institutions and information sources related to water pollution, environmental management, human settlements, hazardous substances, solid waste, wastewater, water augmentation and more. The information is updated by IETC as well as by EST contributors, individual users, organisations and institutions.
- *UNEP Sustainable Energy Finance Initiative* http://www.sefi.unep.org/index.php
- *The Small Business Innovation USA Program – http://www.sba.gov/sbir/* The SBIR is a part of the Environmental Protection Agency's (EPA) research and development efforts to protect human health and the environment. Through the SBIR Program, EPA makes awards to small, high-tech firms for research and development of cutting-edge technologies. The Program is intended to spawn commercial ventures that improve our environment and quality of life, create jobs, increase productivity and economic growth, and improve the international competitiveness of the U.S. technology industry.
- *EPA Environmental Technology Verification Program* – http://www.epa.gov/etv/ ETV looks to verify the environmental performance characteristics of commercial-ready technologies through the evaluation of objective and quality assured data. ETV's goal is to provide potential technology purchasers and permitters with an independent and credible assessment of what they are buying and permitting.
- *The Inter-American Program for Environment Technology Cooperation* – http://www.IDRC.ca/industry/index_e.html#inter-american. This initiative aims to respond to the challenges faced by small and medium size enterprises in Latin America and Caribbean countries to adopt cost-effective, environmentally sound technologies and management practices. The Program consists of six roundtables on issues involved in environment management in six key industry sectors and of a number of successful case studies presented by participating companies.

Exercise 3.5 – Introducing environmentally sound technologies

1. **Conduct a hypothetical risk assessment of your current business or industry. Consider and discuss how CP and improved technologies (hard and soft issues) might reduce any risks you have identified.**

Encourage the delegates to share their ideas regarding the various possibilities that may exist within their companies (even if only at a general level) for improving energy and water efficiency, reducing the use of certain (e.g. toxic) raw materials, and/or minimising the generation of waste at source.

Delegates should be encouraged to identify technical (hardware) and managerial (software) possibilities within their operations relating e.g. to (see slide 6):

- Raw material, water and energy inputs
- Organisation and management techniques
- Equipment and process technology
- Changing the nature of their final products
- Managing wastes, through prevention at source and internal/external recycling

After identifying some possible options at a general level, ask the delegates to consider the extent to which these options have been investigated in the past. In doing so, they should try and identify any barriers that may have impeded the introduction of environmental sound technologies within their companies. Stimulate discussion on the possible implications for implementing any of the identified measures aimed at promoting cleaner production within their operations. Ask them to consider both the potential economic and management costs and benefits, as well as to begin to quantify the potential environmental benefits. (Slide 7 could be used as a basis for this discussion).

2. **Consider the following statement: CP is not sufficient for sustainable development. There is a need for responsibility to extend to consumerism. Sustainable production and consumption are two sides of the same coin – you cannot have one without the other.**

The aim of this discussion is for participants to appreciate that while introducing ESTs – and implementing cleaner production and eco-efficiency practices – can have significant benefits, on their own such measures will be insufficient for achieving sustainability if there continues to be increasing consumption. It is important to consider the implications of this for the business community, particularly in the context of business models that thrive on selling more products. Prompt delegates to consider options for switching from selling products to providing related services, and also to review the role of business in stimulating higher levels of consumption. Ask the delegates to identify possible actions that business can (and is?) taking to promote more sustainable consumption patterns.

3. **For each of the case studies, delegates should consider the following:**
   - **Identify the possible barriers and drivers for introducing environmental sound technologies and/or implementing cleaner production practices.**
   - **Note how for most of these case studies the companies (especially the SMEs) had external support in the form of funding and/or technical assistance for identifying and implementing environmental improvements (CP). Discuss how SMEs benefit from shared support. Is it possible to do it on your own? What are the barriers to doing it alone? What are the options for support?**
   - **What are the benefits of case studies – how can businesses share information and awareness through case studies? Do you think the successes of one industry is applicable to other industries?**

Checklist: Practical Implications of Principle 9

The following brief checklist is intended to provide general guidance to companies in assessing the extent to which they have effectively made provision for environmental technologies within their corporate activities.

OPTION	Yes ✔	No ✖
1 Have you established a corporate or individual company policy on the use of ESTs?		
2 Have you formed partnerships between suppliers and contractors that use these technologies (for example have you obtained or provided information on the environmental performance of technologies used)?		
3 Have you examined investment criteria and the sourcing policy for suppliers and contractors to ensure that tenders stipulate minimum environmental criteria?		
4 Have you co-operated with industry partners to ensure that 'best available technology' is available to other organisations?		
5 Have you increased internal awareness of the benefits of ESTs?		
6 Have you improved company culture and practices to facilitate ESTs?		
7 Have you investigated ways to make existing technologies become more 'environmentally sound' by changing the management and operation practices associated with the technology – for example implementing stricter control measures or changing washing procedures to minimise waste?		
8 Have you refocused research and development towards technology, service and product design for sustainability?		
9 Have you introduced life cycle assessment (LCA) in the development of new technologies and products, so as to take into account impacts in manufacture, use and at the end of life of the product?		
10 Have you benchmarked against any guidelines outlining Best Available Technologies?		
11 Have you identified alternative ESTs?		
12 Have you made information available to stakeholders that illustrate the environmental performance and benefits of using ESTs?		
13 Do your ESTs encompass total systems that include know-how, technical procedures, goods and services, equipment, and organisational and managerial procedures?		
14 Do you use an appropriate method for evaluating technology options in terms of their environmental and related impacts to ensure that the process of implementing a process technology will result in the best sustainability outcomes?		
15 In order to make the best use of ESTs, have you analysed and chosen technologies based on your needs and development priorities, and then adapted these technologies to specific local conditions?		
16. Have you made use of the following tools to assist in the development and implementation of ESTs?		
The decision regarding which alternative technology to use for an existing or new process can be assisted by an **Environmental Technology Assessment** (EnTA) - an analytical tool designed to assist the sustainability decision-making processes related to technology adaptation, implementation and use. Use EnTA to assess implications of a technology and guide selection of technology. Use EnTA as a scoping tool at the pre-investment stage, before the development of a formal/full technology proposal		
Use **Environmental Impact Assessments** to identify and predict the environmental impacts of a project, policy or similar initiative and to provide a basis for decision on acceptability of the likely impacts. Use EIA prior to decision on whether or not the initiative should proceed		

OPTION	Yes ✔	No ✖
Use **Environmental Risk Assessment** to estimate and compare risks to the environment and public health in order to determine the environmental consequences of the initiative under consideration. Use ERA at any time, as determined by the initiator.		
Use **Life Cycle Assessments** to evaluate the environmental burdens associated with a product, process or activity, explicitly over the entire life cycle. It can be used at any time – from RandD to assess alternatives to once implemented to determine options for improvement of existing technologies.		
Use **Cleaner Production Opportunity Assessments** to identify all techniques that can minimise environmental impacts of existing processes that may include the adaptation of existing technologies or the purchase of new technologies.		
Each assessment tool can in fact complement the other tools, and be used to help focus the different phases of the technology development and implementation, thereby promoting a better understanding of the effect a technology has upon the environment. (Refer to Module 4 for more detail on each of these tools)		

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