

**Manual
on the
Development of Cleaner
Production Policies—
Approaches and
Instruments**

Guidelines for
National Cleaner Production Centres and Programmes

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UNIDO CP Programme

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Background and Introduction

The cornerstone of the UNIDO Cleaner Production (CP) programme is that CP can only be sustained in a country if adequate capacity exists to promote it. A core of professionals in the beneficiary country is essential to adjust CP to local conditions. A main objective of UNIDO's programme is to build capacity through National Cleaner Production Centres (NCPCs). Rather than delivering ready-made solutions, the Centres and their CP assessors train and advise clients on how to find the best solution for their specific problems.

The training kit for the development of CP policies is designed to assist UNIDO's cleaner production programmes, in particular the NCPC programme, in crucial aspects of CP planning and CP policy development.

Based on experience gained in implementing the programme in Latin America, the training kit facilitates the organization of modular interactive seminars on CP policy development, trends and instruments.

The complete package includes:

- Ready-to-use slides in PowerPoint for presentation during seminars
- The *Manual on the Development of Cleaner Production Policies—Approaches and Instruments*, which provides methodological guidelines, suggestions on seminar organization, background reading on presented topics and references to relevant Internet sources

The objectives of the package are:

- (a) To provide staff of CP Centres with guidelines and ready-to-use material on CP policy development;
- (b) To analyse in detail the process and steps of CP policy development and the role that various stakeholders can play;
- (c) To demonstrate policy tools and instruments that can be applied to promote CP and preventive environmental management;
- (d) To present recent trends and emerging new approaches in CP policy development;
- (e) To show experience in CP policy development in Latin America and worldwide; and
- (f) To encourage the use of the Internet as a source of information about CP policies.

Contents and objectives

The training kit covers five topic-related modules:

- Introducing CP
- Basics of a national CP policy
- CP policy development cycle
- CP policy tools and instruments
- Recent trends in CP policy

The contents of each module is presented below.

Module	Content and objective	Time required
1	The objective of module 1 is to introduce the basic concepts of CP and show how CP can be applied in practice to the benefit of industry. It clarifies several common misconceptions about CP. It presents the evolution of the CP approach, and discusses current activities in CP implementation in Latin America and worldwide.	1 hour
2	The objective of module 2 is to establish a framework of reference for CP policy development. It introduces basic concepts related to CP policy, including policy objectives, strategy and a plan of action. It describes the general objectives of a CP policy, as well as the benefits of a national CP programme. The module includes a discussion of the need to integrate CP into other national policies (mainstreaming) as well as a review of activities that could help a CP Centre increase its visibility as a national policy player.	1 hour
3	Module 3 presents the policy development cycle. It proposes a structured approach, based on a sequence of steps. From an overview of the necessary start-up conditions for successful CP policy development, it leads to the specific actions that need to be taken, including stakeholder analysis, evaluation of the existing situation and setting up a steering committee and a national CP policy development group. It analyses additional steps of the policy cycle, from identifying priorities and key objectives, policy formulation and implementation, to the monitoring and evaluation of CP policy effectiveness. The module also provides an overview of the main obstacles to the successful development of CP policy.	3 hours (8 hours with exercises)
4	Module 4 presents environmental policy instruments that can be used in promoting CP. Regulatory (command and control), economic (market-based) and information and soft approach instruments are discussed in detail, including concrete examples from Latin America and other regions.	2 hours
5	Module 5 presents recent trends in CP implementation and new approaches to CP policy development. The implementation of preventive environmental programmes at the municipal level and CP financing frameworks are discussed in detail.	1 hour
Annex	List of recommended Internet sites	

Each module provides:

- A short description of the topics covered and an indication of the approximate time required for the presentations
- Texts of the slides in the PowerPoint presentation, which is an integral part of the training kit, as well as the objectives and salient points for each slide
- A detailed explanation of the subjects covered in the slides
- Examples of actual experiences in the implementation of CP policies
- Internet addresses of web sites that provide further information on specific topics
- Suggested role plays and interactive group exercises

The annex provides a full list of recommended Internet resources. The Internet addresses are current as of January 2002.


The present manual represents a useful starting point for CP Centres to design policy-related events. Thanks to its modular structure and the detailed explanation accompanying each slide, the CP Centre can fine-tune the sequence of slides to the objectives of a planned session. For example, within modules, users may choose to omit those parts of the material that are not relevant to the particular audience, or they may prefer to add their own slides. Similarly, the material could be given to participants as a handout after an event, or assigned as homework before a seminar.

The *Training Manual* was developed as a part of UNIDO's effort to assist CP Centres in Central America in the continuation of their policy work. As many references and examples as possible were drawn from Latin American countries in order to best meet the needs of the audience. Whenever the quoted text of national CP policies was originally in Spanish, it is presented in the *Manual* both in English and in Spanish. The package may equally well be used by CP Centres in other countries without the need for major modification.

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■■■ MODULE 1

 1 hour

INTRODUCING CLEANER PRODUCTION:

- Environmental management and sustainable development
- CP basic terms and characteristics
- CP activities in Latin America and worldwide

■■■ OBJECTIVE OF MODULE 1:

The objective of module 1 is to introduce the basic concepts of CP and show how CP can be applied in practice to the benefit of industry, while clarifying several common misconceptions about CP. The module describes the evolution of the CP approach and discusses current activities in CP implementation both in Latin America and worldwide.

SLIDE: Evolution of approach to environmental protection

- No action and/or lack of recognition for the problem until mid-20th century
- Dispersion/“solution by dilution” (the 1960s)
- End-of-pipe treatment (the 1970s)
- Recycling and energy recovery (the 1980s)
- Cleaner production and preventive measures (the 1990s)
- In the future: dematerialization? Industrial ecology?

- ❖ This slide presents a short overview of how the approach to environmental protection has evolved over the years. The goal is to track its evolution, from the lack of pollution control, to CP and preventive measures. At this point, it may also be useful to highlight the difference between end-of-pipe pollution control and CP and the preventive approach.

Background

Industry continues to be a major cause of environmental problems, both globally and locally. It has a strong influence on both the local environmental situation and quality of life. In recent years, the serious impact of municipal operations on the state of local environment has attracted attention. Over the past decades, the industrialized nations have responded to pollution and environmental degradation in five characteristic ways:

1. By not recognizing—or ignoring—the problem of environmental pollution;
2. By diluting or dispersing pollution, so that its effects are less harmful or apparent;
3. By seeking to control pollution and wastes (the end-of-pipe or pollution control approach);
4. By trying to develop and improve environmental technology that will help close the loops in material flow streams during the production process, and facilitate reuse and recycling, and
5. Most recently, by implementing Cleaner Production through the prevention of pollution and waste generation at source.

In the past, command and control methods were widely used by environmental agencies until their disadvantages became apparent. Traditional pollution control solutions proved less effective than they initially appeared, and there came a point beyond which further requirements became prohibitively expensive. More often than not, end-of-pipe technology simply shifted waste or pollutants from one environmental medium to another, as in the case of air and water pollution control devices that produced concentrated hazardous waste for leaking landfills. The most significant disadvantages of the command and control method is that firstly, it does not allow companies to explore other, cheaper ways to reduce pollution, and secondly that enforcement is both complicated and expensive because of the need for a strong and qualified administration. All in all, pollution control approaches of the 1970s and 1980s were no longer sufficient, and a new more flexible approach, had to be put in place that allowed creative solutions to be developed jointly by industry, government and environmentalists.

In the mid-eighties, two new methods, the recycling of waste and energy recovery came into common use, alongside the traditional pollution control approach. By the end of the decade, the common-sense concepts of resource conservation, risk reduction and pollution prevention became widely accepted by both governments and industry. The United States of America passed a Pollution Prevention Act in

1990, requiring companies to detail their efforts to reduce pollution. During the same period, the first efforts were undertaken to transfer the United States-dominated experience with industrial pollution prevention to Europe. Most notable were the Swedish Landskrona project and the Netherlands' PRISMA project. Both projects succeeded in creating successful business examples of the implementation of pollution prevention, and in turn triggered a series of pollution prevention projects in other European countries. There was an intellectual shift from the question of what to do with pollution to the question of why pollution is generated and how it can be prevented.

Since the beginning of the nineties, the concepts of Cleaner Production, pollution prevention, waste minimization and eco-efficiency have been gradually gaining popularity and acceptance. The sequence of 'ignore, dilute, control, improve processing and prevent generation' culminated in an activity that combines maximum positive effects on the environment with economic savings both for industry and society.

As far as the near future is concerned, a number of new concepts are emerging, such as industrial ecology, factor 4 (producing twice the input with half the resources), factor 10 and zero emissions initiatives. Other new trends include integrated product policies, the wider use of the life-cycle approach and a focus on dematerialization and substitution.

Industrial ecology and industrial metabolism represent new patterns of industrial production and are closely related to the concept of Cleaner Production. They involve the study of industrial systems and economic activities and their links to fundamental environmental systems, with a view to imitating the material recycling aspect of an ecosystem. Material flow management is crucial to these approaches. One of the most important goals of industrial ecology is to transform one industry's waste into another industry's raw material. This can be achieved through eco-industrial parks, or as a response to the Zero Emissions Research Initiative in Japan, as well as many other ways.



EXERCISE

The session begins with an introduction of participants. Invite participants to introduce themselves one by one, to describe their personal experience with CP and to explain both the interest and involvement of their own institution in CP policy development. If the meeting is an interactive session, this introduction can be used as an icebreaker, where participants are divided into pairs, with each one introducing the other person.

SLIDE: Key dates

1972—United Nations Conference on the Human Environment, Stockholm
 1987—Brundtland’s Report “Our Common Future” and the concept of sustainable development
 1989—CP programme at UNEP
 1992—United Nations Conference on Environment and Development and the adoption of Agenda 21
 1994—UNIDO/UNEP NCPC Programme
 1998—UNEP’s International Declaration on CP

- ❖ Show that global initiatives related to environmental protection started in earnest somewhere in the eighties, while operational CP activities began in the nineties. The key point is to demonstrate to the audience the growing momentum.

Background

1972: The first large international conference on the environment was held in Stockholm, Sweden, to highlight the issue of environmental degradation as a global concern. The United Nations Conference on the Human Environment, held in 1972, was one of the first attempts to move away from a sectoral towards a more comprehensive approach that would include all aspects of environmental protection. This shift was reflected in the Declaration of the Conference as well as the Action Plan for the Human Environment, which was adopted by the Conference. Recognition of the environment as an important new political issue was reflected in the establishment of Ministries of Environment in different countries following the Conference.

1987: In 1987, Gro Harlem Brundtland, former Prime Minister of Norway, chaired a committee whose goal was to produce a report on the state of the environment for the United Nations World Commission on Environment and Development. The product of the Committee’s work, “Our Common Future”, otherwise referred to as the Brundtland Report, introduced the concept of sustainable development and provided one of the first and most commonly used definitions:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

1989: In 1989, UNEP began its initiative on Cleaner Production, coining and conceptualizing the actual term ‘Cleaner Production’. Rather than focusing simply on ‘clean technology,’ UNEP’s Division of Technology, Industry and the Environment stressed the importance of effective management and organization, and the need for constant improvement in performance. UNEP’s Cleaner Production activities have strived to provide leadership and encourage partnerships to promote the concept of Cleaner Production on a worldwide scale. Specifically, they have involved the provision and exchange of information; capacity-building and technical assistance; and promotion of cleaner production strategies.

1992: In 1992, as a follow-up to recommendations of the Brundtland Report, the United Nations convened the Conference on Environment and Development in Rio de Janeiro (alternatively known as the Rio Conference, the Earth Summit or Cumbre de la Tierra). The Rio Conference produced a more detailed document titled Agenda 21, designed as an agenda for action for the twenty-first century. Agenda 21 offered a set of goals for the achievement of sustainable development that could be tailored to a country’s specific needs.

Agenda 21 dealt with a variety of issues such as poverty, environmental degradation and social inequity. Sustainable development was seen as a solution to those problems and many more. It continues to have profound implications for industrial policy and industrialization patterns in developing countries, posing two critical challenges:

1. To ensure conservation of environmental resources in the most cost-efficient manner, and
2. To enable industry in developing countries to respond to trends that may emerge from international environmental norms and standards.

Since the 1992 Rio Conference, many countries have successfully established national, regional, and local policies addressing sustainable development. A follow-up conference, Rio + 10 will be held in the year 2002, in Johannesburg, South Africa.

1994: In 1994, UNIDO and UNEP jointly initiated the worldwide National CP Centre Programme. UNIDO is responsible for overall administration, local liaison and the provision of industrial technical expertise, especially for sectoral industrial demonstrations. UNEP and UNIDO are also providing strategic environmental expertise, training, information and policy analysis.

Since 1994, twenty-two CP Centres have been established in the following countries (listed in alphabetical and not chronological order): Brazil, China, Costa Rica, Cuba, Czech Republic, El Salvador, Ethiopia, Guatemala, Hungary, India, Kenya, Republic of Korea, Mexico, Morocco, Mozambique, Nicaragua, Slovak Republic, Sri Lanka, United Republic of Tanzania, Tunisia, Uganda, Viet Nam, and Zimbabwe. The centres in Cuba, Republic of Korea, Sri Lanka and Uganda were opened in 2001.

NOTE: It may be useful to point out that preventing pollution at source was initiated in the seventies, with the pioneering work of the United States multinational company 3M. Wider implementation of Cleaner Production or pollution prevention began even before the UNIDO/UNEP programme, examples including the Norwegian World Cleaner Production Society efforts, or the USAID-funded pollution prevention programmes.

1998: In 1998, UNEP prepared the International Declaration on Cleaner Production, a voluntary public statement of commitment to the strategy and practice of Cleaner Production. It was publicly unveiled during the High-Level CP Meeting CP5, in October 1998 at Phoenix Park, Republic of Korea, with 67 inaugural signatories. Signing ceremonies at other national and international venues continue to add more Declaration partners to the signatory list. The number of regional and national signatories as of November 2001 totals over 1,000, including 45 national Governments. Signatories from Latin America include the Governments of Argentina, Colombia, Costa Rica, Mexico, Nicaragua and Panama.

The goals of the Declaration are to encourage support for the adoption of Cleaner Production activities, intensify the commitment of the various actors involved, promote international cooperation and spread the awareness of the concept.

The Declaration reflects the knowledge that each individual sector (public, private, non-governmental, academic, etc.) has a role to play. As a framework for action, its six principles provide a general overview of activities that will allow each sector to move towards the adoption of the Cleaner Production strategy.



<http://www.uneptie.org/pc/cp/declaration/home.htm>

SLIDE: Sustainable development

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- ❖ Sustainable development is a commonly used term, but many fail to consider what it means in practice. The objective of this slide is to introduce the concept, clarify the underlying assumptions and show that it affects the entire population, across generations.

Background

Many organizations are talking about sustainability yet it means different things to different people. Various terms in use include sustainable development, sustainable communities, sustainable agriculture and environmental sustainability. There are now hundreds of operational definitions, but most are variations of the first definition of sustainable development put forward by the Brundtland Commission, namely:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

This definition provides a common framework for sustainable development for localities across the world. The definition is purposefully vague, making it acceptable to a broad range of people and allowing them to create a more detailed interpretation. It contains within it two key concepts:

- The concept of “needs”, in particular the essential needs of future generations, to which attention should be paid; and
- The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

In the past, it was thought that economic development and environmental sustainability could not be achieved in unison. Sustainable development suggests that these two interests can actually complement one another. In addition to environmentally-sensitive development, sustainable development promotes intergenerational social equity, attempting to alleviate inequities in the current world, as well as for future generations. The goals of economic and social development must be defined in terms of sustainability in all countries whether developed or developing, market-oriented or centrally planned.



<http://www.un.org/esa/sustdev/>

SLIDE: CP as a tool for sustainable development

Cleaner Production is recognized as a tool that can contribute to the sustainable forms of economic development, as endorsed in Agenda 21 adopted by the United Nations Conference on Environment and Development (UNCED) (Chapters 20, 30 and 34).

CP is a strategy that protects the environment, the consumer and the worker while improving the industrial efficiency, profitability and competitiveness of enterprises.

- ❖ This slide presents a brief overview of how Cleaner Production relates to the concept of sustainable development. It shows, in particular, the prominence of CP as a preferred environmental strategy of Agenda 21 that not only provides environmental benefits but also leads to the enhanced competitiveness of enterprises.

Background

Agenda 21 is essentially a programme of action covering forty different sectors and topics. It pays particular attention to national legislation, measures, plans, programmes and standards, and to the use of legal and economic instruments for planning and management. It is one of the most prominent, significant and influential non-binding instruments in the environmental field and has become a guide for environmental management in most regions of the world. Its most important impact, through its core concept of sustainable development, has been to extend the environmental debate beyond environmental ministries or departments, to include businesses, academia and civil society.

Chapter 30 of Agenda 21 provides guidelines for meeting the goals and expectations set for businesses. To that end, Agenda 21 recommends:

- (a) To recognize environmental management as one of the highest corporate priorities;
- (b) To strengthen partnerships to implement principles of sustainable development;
- (c) To use economic instruments where prices of goods and services reflect environmental cost;
- (d) To adopt and report codes of conduct on environmental practice;
- (e) To cooperate with workers to improve knowledge of, and skills for, sustainable development;
- (f) To promote Cleaner Production as a preferred environmental strategy.

Cleaner production is an integral, necessary component for achieving sustainable development. By eliminating or reducing waste at the source, economic development can continue to occur, but in a more environmentally sustainable manner. Some of the intrinsic concepts in CP that directly support sustainable development include:

- (a) Reduction of waste at source and reducing the use of raw materials as a more sustainable practice for the Earth's limited resources;
- (b) Pollution prevention, which covers the environmental portion of the triple bottom line;
- (c) Greater degree of partnerships and communication with local governments, universities, and communities to ensure local participation and encourage equity;

(d) Return on investment calculations that help the economy and the environment.

In this way CP not only protects the environment and human health, but also improves the economic efficiency, competitiveness and profitability of enterprises. It can bring significant financial and economic advantages as well as environmental benefits at the local and global level. Support for Cleaner Production can, for example, play an important role in relation to the Framework Convention on Climate Change.

It must, however, be clear that even though Cleaner Production is an important component, it alone will not lead to sustainable development; sustainability requires comprehensive cultural changes within industry, governments and communities. On the other hand, Cleaner Production and preventive environmental management can represent the first step towards sustainability.



<http://www.unido.org/SSITES/ENV/ENVLEARN/>

SLIDE: What is Cleaner Production ?

Show block chart with the definition of CP
(available in the PowerPoint file only)

SLIDE: What is Cleaner Production/2?

UNIDO's holistic approach to Cleaner Production is a preventive, integrated strategy that is applied to the entire production cycle in order to:

- (a) Increase productivity by ensuring a more efficient use of raw materials, energy and water;
- (b) Promote better environmental performance through reduction at source of waste and emissions;
- (c) Reduce the environmental impact of products throughout their life cycle by the design of environmentally friendly but cost-effective products.

The net effect is to give enterprises in developing and transition countries a more competitive edge, thereby facilitating their access to international markets.

UNIDO's holistic approach to CP includes its application in sectoral activities, as well as the implementation of multilateral environmental protocols through development and transfer of CP technology and investment promotion.

Cleaner production requires changing attitudes, exercising responsible environmental management and promoting technology change.

- ❖ Use the slide with the graph to introduce the "formal" definition of CP, and to help participants to visualize the concept (charts and graphs are effective in explaining multi-layered concepts). The key points to stress while showing the slides are: (a) the preventive and continuous character of CP, (b) its applicability not only to processes (e.g. production) but also to products and services, and finally (c) the parallel achievement of environmental and economic gains.

Background

While the UNEP definition of Cleaner Production is self-explanatory, it is useful to rephrase the message, stressing that Cleaner Production describes a preventive approach to environmental management. Cleaner Production is called a “win-win” strategy, because it protects the environment, the consumer and the worker while at the same time improving industrial efficiency, profitability and competitiveness.

Cleaner Production approaches include hardware (goods, services, equipment) and software (technical know-how, organizational and managerial skills and procedures). Compared with standard methods, Cleaner Production techniques and technologies use energy, raw materials and other inputs [material] more efficiently, produce less waste, facilitate recycling and reusing resources and handle residual wastes in a more acceptable manner. They also generate less harmful pollutants and can assist in lowering emissions.

Contrary to the common misconception, CP is not a mere technical fix (in other words, it is not “clean technology”), but refers to the approach (the mindset and way of thinking) of how goods and services are produced with the minimum environmental impact within present technological and economic limits. Cleaner Production does not deny economic and industrial growth, but it insists that growth be ecologically sustainable. Moreover, since there are also economic considerations involved, it should not be considered simply as an environmental strategy.

At this point, it might be pointed out that the key difference between pollution control and Cleaner Production is timing. Pollution control using end-of-pipe measures is an after-the-event, “react and treat” approach. Cleaner Production, on the other hand, is a forward-looking, “anticipate and prevent” philosophy.

CP is neither a legal nor a scientific definition but rather a broad term that covers what some countries or institutions call pollution prevention, waste minimization, eco-efficiency or green productivity (these related concepts are covered in more detail in the following slides).



http://www.unepie.org/pc/cp/understanding_cp/home.htm

SLIDE: CP for production processes

For production processes, CP aims:

- (a) To reduce the consumption of raw materials and energy used in the production of one unit of product;
- (b) To eliminate as far as possible the use of toxic and dangerous materials;
- (c) To reduce at source the quantity and toxicity of all emissions and wastes generated and released.

SLIDE: CP for products

For products, Cleaner Production aims to reduce the environmental, health and safety impacts of products:

- Over their entire life cycles
- From raw materials extraction, through manufacturing and use, to the ultimate disposal of the product.

SLIDE: CP for services

For services, Cleaner Production implies incorporating environmental concerns into the design and delivery of services.

The design of a service is crucial: not just, “Are we doing things right?” but rather, “Are we doing the right things?” and, “Are we doing them the right way?”

- ❖ The above three slides reinforce the message that CP is applicable not just to production processes, but also to products and services. It could be mentioned that CP has been used successfully in product design and in the service sector (e.g. hotels and tourism, municipal management and hospitals).

Background

The following table presents an illustrative breakdown of the definition of Cleaner Production, and how it applies to processes, products and services. It could serve as a useful handout for the module.

<i>Process elements</i>	<i>Applications</i>	<i>Outcome elements</i>
The continuous application of an integrated preventive environmental strategy		
	Entire production, processes and services	
		<ul style="list-style-type: none"> • To increase eco-efficiency • To reduce risks for humans and the environment
	For production processes, Cleaner Production involves	
		<ul style="list-style-type: none"> • Conserving raw materials, energy and water • Eliminating toxic raw materials • Reducing the quantity and toxicity of all emissions and wastes before they leave the process • Evaluation of technology options

<i>Process elements</i>	<i>Applications</i>	<i>Outcome elements</i>
	For products, Cleaner Production involves	
		<ul style="list-style-type: none"> Reducing negative impacts along the life cycle of a product, from raw materials extraction to its ultimate disposal
	For services, Cleaner Production involves	
		<ul style="list-style-type: none"> Incorporating environmental concerns into designing (reduction of waste through better design) and delivering services. Use of waste for new products
Cleaner Production requires a change in attitudes, application of know-how and improvement of technology		

The key principle of Cleaner Production is that pollutants and waste should be prevented where they originate. During the production process CP can involve a combination of conserving raw materials, water and energy, eliminating toxic and dangerous raw materials and reducing the quantity and toxicity of all emissions and wastes at source. Traditionally, CP has been applied to production, but this has undergone a change in recent years. Cleaner Production aims to reduce the environmental, health and safety impacts of products over their entire life cycles, from the extraction of raw materials, through manufacturing and use, to the ultimate disposal of the product. Life-cycle analysis is a tool that can be successfully applied in this context. Finally, Cleaner Production implies incorporating environmental concerns into the designing and delivery of services. It is important to keep in mind that the design of a service is a crucial stage. It is not just a question of, “Are we doing things right?”, but rather, “Are we doing the right things?” and even further, a question of, “Are we doing these right things the right way?”.

SLIDE: CP as a four-in-one tool

- A management tool
- An economic tool
- An environmental tool
- A quality improvement tool

CP represents a win-win strategy both for the company and the environment. The continuous application of CP will help a company to be more competitive in the market.

- ❖ This slide is intended to reinforce the message that CP is a win-win approach that is not limited to environmental concerns, nor that it has to incur costs for the enterprise. Given its nature as a “four-in-one tool”, it may provide a number of benefits for the enterprise including an increase in competitiveness.

Background

Cleaner Production can be achieved in any single, or combination of, the following ways: good housekeeping and operating procedures, materials substitution, technology changes, on-site recycling and product or service redesign. Pollution and risks to human health and safety are reduced at source, rather than the end of the production process, i.e. at the end-of-pipe stage. The adoption of Cleaner Production typically involves improving maintenance practices, upgrading or introducing new technology, changing production processes and modifying management and quality control procedures.

Cleaner Production is considered a management tool, as it involves rethinking and reorganizing the way activities are carried out inside an enterprise. For CP to be implemented successfully and sustainably, the concept must have the support of middle and top management; this reinforces its function as a management tool.

CP is also an economic tool, because waste is considered a product with negative economic value. Each step to reduce the consumption of raw materials and energy and prevent or reduce the generation of waste, can increase productivity and bring financial benefits to an enterprise. Since CP involves minimizing or eliminating waste before any potential pollutants are created, it can also help reduce the cost of the end-of-pipe treatment that may still, in many cases, be necessary, albeit for lower quantities of emissions.

Obviously, CP is an environmental tool, given that it prevents the generation of pollution in the first place. The environmental advantage of Cleaner Production is that it solves the waste problem at its source, while conventional end-of-pipe treatment often simply moves pollutants from one environmental medium to another, the scrubbing of air emissions, for example, generates liquid waste streams, while waste water treatment produces significant quantities of harmful sludge.

Finally, the systematic avoidance of waste and pollutants reduces process losses and increases process efficiency and product quality. The continuous attention and focus on the organization and management of activities in an enterprise brings the added benefit of an improvement in the quality of products, and a reduction in the rate of rejects.

All in all, Cleaner Production is more cost-effective than pollution control. By minimizing or preventing waste generation, the costs of waste treatment and disposal are reduced. The improved efficiency of processes and better quality control result in economic savings and contribute to enhanced competitiveness. Finally, by reducing emissions, CP protects the environment. This is why it is a win-win situation.

SLIDE: Basic scheme of a CP project

Show the scheme graph (available in the PowerPoint file only)

- ❖ A detailed discussion of the methodology of a CP project falls beyond both the scope of this manual, and the concerns of a seminar on CP policy development. It is, however, useful to show the broad sequence of steps to a non-technical audience. When presenting the slide, it should be pointed out that the continuous improvement loop is at the core of CP methodology.

- ❖ It is also worth mentioning that the scheme with the continuation of CP over time coincides well with the continuous environmental improvement required in the ISO 14001 standard, one of the very reasons why CP and ISO14k are now being applied together more frequently.



http://www.unepie.org/pc/cp/understanding_cp/cp_industries.htm

SLIDE: Examples of CP opportunities

- Material substitution
- Good housekeeping
- Better process control
- Equipment modification
- Technology change
- On-site recovery and reuse
- Production of useful by-products
- Product modification

- ❖ This slide lists specific ways in which a given enterprise can implement CP. Without going into technical details, examples of the different options could be presented. It should be noted again that while some options involve costs, others do not, and may even result in significant savings in addition to environmental benefits.



<http://www.emcentre.com/unepweb/>

SLIDE: Why is CP beneficial for industry?

- Cost savings through reduced wastage both of energy and materials
- Improved operating efficiency of the plant
- Better product quality and consistency
- Recovery of some wasted materials
- Possibility to improve the working environment (health and safety)
- Improvement of the enterprise's image
- Better compliance with environmental regulations
- Cost savings on end-of-pipe waste treatment
- New and improved market opportunities

- ❖ The key point to make is that there are a variety of economic reasons why it is profitable for a company to apply CP. Some involve direct savings, while others are less tangible, such as an improved image or new market opportunities.

Background

Cost savings are one of the most important direct economic benefits from implementing a CP project. Lower water consumption, higher energy efficiency or a reduced need for input materials result in lower operating expenses. The improved efficiency of the plant's operation, through the implementation of both technical and management measures, is another benefit. This may in turn lead to lower labour requirements to maintain production. Finally, as has already been mentioned, while CP does not necessarily eliminate the need for end-of-pipe treatment, it may result in significant savings in the construction and operating cost of pollution control equipment. The three factors mentioned above lend themselves well to good housekeeping measures that normally involve little or no investment.

Better product quality and consistency mean that fewer final goods are rejected for quality reasons. Rejects at the final stage of production are very expensive since resources, time and labour have been wasted producing something that cannot be sold, or can only be sold as an inferior quality item at a low price. Since there is no foolproof quality check before goods are shipped to a client, improved quality and consistency lowers the probability of a faulty product being delivered, an eventuality that tends to strain the client-supplier relationship.

The recovery of wasted materials can be a crucial economic factor in some industries, where input materials are expensive. In jewellery producing workshops, for example, there is less than 1 per cent of gold wastage (process waste), not because jewellers are especially environmentally conscious, but because the input material is so expensive. In terms of the more common industries, metal plating shops, for example, can recover a significant percentage of the chemicals used in process baths, thereby saving substantial amounts of money.

A better general management of operations can have a positive effect on the working environment, and on health and safety. Lower absenteeism and the avoidance of potential liabilities from employees' claims are obvious benefits, albeit difficult to estimate accurately. The reduced risk of uncontrolled releases and industrial disasters can help prevent environmental (and financial) damage and help to avoid the related bad publicity. In countries where environmental consciousness is high, there may exist the additional advantages of good publicity and promotion of the "green image" of a company. This can in turn lead to new market opportunities, since some clients now require their supplier chain to demonstrate a proactive environmental stance, e.g. through ISO 14001 certifications.

Finally, in some companies CP projects are initiated to improve the level of compliance with environmental regulations, either as a result of direct regulatory pressure from the authorities, or in the search for a more cost-effective way to meet legal requirements than that offered by end-of-pipe measures.

SLIDE: Other related concepts

- Eco-efficiency
- Waste minimization
- Pollution prevention
- Green productivity

Cleaner Production = pollution prevention = waste minimization = ecoefficiency

For businesses, these concepts mean practically the same thing.

SLIDE: Other related concepts/2

What all those concepts have in common is an attempt to maintain the same level of output using less inputs (e.g. water, energy, raw materials), thereby improving efficiency and reducing pollution.

The underlying principles are innovation and prevention of pollution in the first place, rather than controlling the emissions with end-of-pipe measures once the “necessary” contamination has been generated.

- ❖ The idea is to present the most common terms related to Cleaner Production and preventive environmental management. It should be clarified that the term “Cleaner Production” is used in its broadest sense, that includes various other related concepts. While they do differ slightly, it is worth stressing for practical purposes, especially when dealing with the industrial entrepreneur, that the concepts mean practically the same.

Background

The terms eco-efficiency, pollution prevention, source reduction and waste minimization, and green productivity are often used synonymously with Cleaner Production. Cleaner production is a strategy for the continuous improvement of products, services and processes in order to reduce pollution and waste at source, which can also result in financial benefits.

Eco-efficiency: The term “eco-efficiency” was coined by the World Business Council for Sustainable Development in 1992, and is defined as the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the Earth’s estimated carrying capacity.

Eco-efficiency is a combination of economic and ecological efficiency, and is basically about doing more with less. Eco-efficiency means producing more goods and services with less energy and fewer natural resources. Eco-efficient businesses get greater value out of their raw materials as well as producing less waste and less pollution.

Eco-efficiency and Cleaner Production are strategies that businesses can use to improve their bottom line and their environmental performance at the same time. The two concepts are almost synonymous, the slight difference being that eco-efficiency has as its starting point economic efficiency that benefits the environment, while Cleaner Production deals with environmental efficiency that brings economic benefits.

Waste minimization: The concept of waste minimization was introduced by the United States Environmental Protection Agency (EPA) in 1988. It defined the waste prevention approach and its techniques as the on-site reduction of waste at source by changes in the input raw materials, technology changes, good operating practices and product changes. Off-site recycling by direct reuse after reclamation are also considered waste minimization techniques, but have a distinctly lower priority than on-site prevention or waste minimization.

Currently the terms “waste minimization” and “pollution prevention” are often used interchangeably. Pollution prevention means not generating waste in the first place, by reducing it at source. Waste minimization is a broader term that also includes recycling and other ways of reducing the amount of waste to be treated or disposed.

Pollution prevention: The United States Environmental Protection Agency defines pollution prevention as source reduction—preventing or reducing waste where it originates, at source. This includes practices that conserve natural resources by reducing or eliminating pollutants through increased efficiency in the use of raw materials, energy, water and land. Under the Pollution Prevention Act of 1990, pollution prevention is the national environmental policy of the United States.

The terms “Cleaner Production” and “pollution prevention” are likewise often used interchangeably. The distinction between the two tends to be geographic: “pollution prevention” is generally used in North America, while “Cleaner Production” is the preferred term in other parts of the world. Both Cleaner Production and pollution prevention aim to reduce pollution and environmental impact continuously through source reduction, that is, by eliminating waste within the process, rather than at the end-of-pipe stage. It is worth noting that waste treatment is not generally included in the definition of Cleaner Production or pollution prevention because it does not prevent the creation of waste.

Green productivity: Green productivity is a term used by the Asian Productivity Organization (APO) to address the challenge of achieving sustainable production. APO started its green productivity programme in 1994. In common with Cleaner Production, green productivity is a strategy for enhancing productivity and environmental performance in order to improve overall socio-economic development.

There are other related concepts not discussed in this manual that could also be considered an integral part of sustainable development. These include:

- (a) *Industrial ecology*, where industries integrate their raw material inputs and waste outputs, finding matches, where one company’s waste is another company’s raw material, and sharing common systems, such as a single, efficient co-generation plant rather than multiple smaller, more-polluting power sources;
- (b) *Industrial Eco-parks*, which are common areas where compatible industries can practise industrial ecology;

- (c) *Life-cycle analysis*, conducted for a whole product rather than specific stages of production. A complete review is carried out of a product's impact on the environment, from the extraction of the raw materials to its final disposition; when this is done using cost as a common denominator, it is known as life-cycle costing;
- (d) *Design for environment*, which means incorporating environmental considerations into the design of a new product or facility; and
- (e) *Sustainable enterprises*, based on integrated economic, environmental and socially-responsible company management.

In summary, it should be underlined that the differences between Cleaner Production, pollution prevention, waste minimization, waste prevention and eco-efficiency are, for all practical purposes, minimal. Each concept shares a common emphasis on:

- (a) The simultaneous achievement of economic and environmental benefits;
- (b) The integration of environmental management into mainstream management practice;
- (c) The application of an integrated, preventive environmental strategy to production processes as well as to products throughout their life cycle;
- (d) The minimization of risks to human health and the environment;
- (e) The sustainable use of natural resources.

In other words, CP is about achieving the same production output with less inputs (materials and energy) and consequently with less pollution. The application of Cleaner Production can significantly improve the resource efficiency and environmental performance of existing production processes, with no or little investment in the first stages. It does not obviate the need to upgrade or replace old equipment; similarly, although it reduces the requirement for end-of-pipe treatment facilities, it does not entirely eliminate it. In contrast to end-of-pipe pollution control, CP and preventive approaches do not take as a given that pollution must be generated and only then treated. Rather, prevention is the first step, instead of damage control.



<http://www.unido.org/doc/331390.htmls>

SLIDE: CP—three common misconceptions

1. CP is not restricted to industry or to production; it has been successfully applied in the service sector and in municipal programmes;
2. CP is not an exclusively technical concept, i.e. it is not the equivalent of 'Clean Technologies'. CP involves a change in attitudes and management practices, the application of available know-how and the improvement or modification of technologies.

SLIDE: CP—three common misconceptions/2

3. CP does not have to be expensive or involve major changes in technology.

The introduction of good housekeeping practices can save an average of 10-15 per cent in energy and 15-20 per cent in water consumption, with little or no investment required.

- ❖ In this section, it is important to clarify that Cleaner Production does not apply merely to “production” (the term is somewhat misleading), that it is not the same as clean technology (a very common perception), and that it does not necessarily involve major capital costs (used as a common argument to justify not implementing CP). The key points to stress are that CP has been successfully applied in industry and in other sectors, both from the environmental and economic perspective, and that practically any organization can benefit from its implementation. The aim is to convince the audience that CP can be used in practically any setting. This is crucial in order to ensure the continued interest and support of participants once they return to their respective organizations.
- ❖ NOTE: To illustrate the third point, the trainer may wish to present two or three good examples of significant environmental benefits brought about by CP to a company in his/her own country.

Background

The term “Cleaner Production” can be somewhat unclear to the audience, especially when translated into other languages. Intuitively, for many people, it implies “cleaning up”, or pollution control rather than prevention. Furthermore, the word “production” suggests that the approach can only be applied to production processes of industry. While CP and the prevention of pollution indeed began in industrial applications, it is important to reinforce the message [delivered while presenting the definition of CP, namely] that CP applies to both production AND processes and services. In recent years, the service sector has seen an impressive number of successful CP projects especially in areas such as tourism and hotel management, hospital and municipal management.

Another common misconception is that Cleaner Production means the same as clean technologies. There are three dangers in this: CP is labelled as a “technical fix”. It suggests new and modern pollution controls and is automatically perceived as something that requires significant amounts of capital. It is important to repeat the message that CP is as much about change in attitudes and management practices, and the application of available know-how, as it is about improving or modifying technologies. Participants should realize that technology upgrades may indeed be a part of a CP project, but not in all instances. Good housekeeping, energy efficiency, input substitution, to name a few, can be used instead. Participants must also be aware that clean technologies mean technologies that are more efficient and less polluting, rather than simply new and more advanced end-of-pipe filters or treatment equipment. Last, but not least, it must be stated that some end-of-pipe treatment may still be necessary, as it is not feasible to eliminate completely the production of wastes, but the scale and the cost of end-of-pipe equipment will be much lower.

The investment required is often put forward as an argument against CP (“We cannot afford a CP project right now”). This is, in fact, the main reason for industries to reject a CP offer and possibly results from a lack of understanding of what CP is all about. It is therefore imperative to convince the audience that CP does not have to be expensive, or involve major technological changes. Merely by implementing good housekeeping measures and making simple changes to operating procedures (“low-hanging fruit”), enterprises can save a substantial amount of money and improve their

environmental performance. Experience of CP in Latin America demonstrates that average savings of 10-15 per cent in energy and 15-20 per cent in water consumption can be achieved with little or no investment. Concrete examples of the benefits from good housekeeping and “low-hanging fruit” in the trainer’s own country provide a good response to those who claim they cannot introduce CP because of lack of funds.



<http://www.unepie.org/pc/cp/home.htm>

SLIDE: Global network of UNIDO/UNEP National Cleaner Production Centres

World map showing the network of UNIDO/UNEP CP Centres
(available in the PowerPoint file only)

- ❖ This slide is intended to show that each CP Centre is a part of an established and sound global network of CP professionals. The key message to convey is that the experience in CP implementation has been drawn from thousands of projects, implemented over the last decade in a variety of countries all over the world. UNIDO and UNEP continue to provide the necessary technical and organizational assistance, and at any given moment there is a pool of professionals backed by global experience, available for consultation.

Background

To promote the application of Cleaner Production in industrial enterprises as well as the incorporation of the concept in the national environmental legislation of developing countries, UNIDO and UNEP together set up the National Cleaner Production Centres (NCPCs) Programme. During the first phase, which started in 1994, the programme established 10 NCPCs in Brazil, China, Czech Republic, Hungary, India, Mexico, Slovakia, Tunisia, United Republic of Tanzania and Zimbabwe. In response to requests from developing countries, and given the progress achieved by the programme, UNIDO and UNEP have, over recent years, added new NCPCs to the programme in the following countries: Costa Rica, El Salvador, Ethiopia, Guatemala, Kenya, Morocco, Mozambique, Nicaragua and Viet Nam. In 2001, new CP Centres were inaugurated in Cuba, Republic of Korea, Sri Lanka and Uganda.



<http://www.unido.org/doc/331390.htmls>

SLIDE: Existing CP Centres in Latin America

Map of the Americas showing existing CP Centres
(available in PowerPoint only)

- ❖ This slide demonstrates that implementation of CP in Latin America is well under way. The key message to convey is that over the last seven years, the concept has taken root in the region, resulting in twelve national institutions and a variety of individual, stand-alone projects in many other countries. It is worth noting that several countries—Brazil, Chile, Colombia, Mexico and Nicaragua for example—have achieved notable success in including CP in their policy agenda.



<http://www.pml-redlatina.net/>

SLIDE: CP Programmes in Latin America

- UNIDO/UNEP—NCPC Programme
- Bilateral programmes (Austria, Canada, Switzerland)
- USAID/EPA
- GTZ/Germany (Agency for Technical Co-operation)
- CP Round Tables of the Americas
- Governmental Council for CP in Latin America
- CCAD-SICA (Central American Environment and Development Commission)

- ❖ At this stage, it should be pointed out that not only are there a dozen national CP Centres or similar institutions, but that there are a number of international organizations using different approaches in the Latin American region. The slide also demonstrates a growing trend to promote CP cooperation on a regional basis.

Background

There has been considerable activity to promote Cleaner Production in the Latin American region. In 1995, UNIDO established National Cleaner Production Centres (NCPCs) in Mexico and Brazil; the NCPCs in Costa Rica, El Salvador, Guatemala and Nicaragua have been in operation since 1998. In 2001, UNIDO started a National CP Network in Cuba.

In addition to the seven above-mentioned UNIDO/UNEP Centres, bilaterally funded programmes led to the opening of CP Centres in Colombia (1998), Honduras (2000) and Peru (2001). Chile established its CPC in 1999, with the support of local funding. A local centre for sustainable technologies is operating in Bolivia, while Paraguay has a centre for waste minimization. In addition, National CP centres and programmes are expected to start in the near future in Argentina, Ecuador and Panama.

Switzerland, Austria and Canada are the main donor countries supporting CP development. USAID has had a number of projects in Central and Latin America, and its new five-year PROARCA II programme designed to improve environmental management problems in Central America is about to start. Finally, the German GTZ (Agency for Technical Cooperation) has activities in Mexico, Central America, Colombia, Venezuela and Brazil.

The level of development of the National CP programmes in the region varies. Some Centres have achieved a high degree of maturity, and are approaching the point of financial self-sustainability. Others are still concentrating on developing demonstration technical cases and success stories in industry. All programmes aim at introducing CP to academic institutions and with a view to including it in the existing curricula. Training materials and manuals have been translated into Spanish or developed locally, but there is a dire need to improve the availability of CP materials in Spanish. In all countries, training and education programmes have been carried out to create a pool of national CP advisers and consultants, although the degree to which these consultants are active varies from country to country.

 EXAMPLE

Second Summit of the Americas: Sustainable Development

At the pan-American level, cooperation on environmental policy development is the domain of the Organization of American States (OAS), among other organizations. The Office of the Summit Follow up of OAS published information on the Second Summit. Some of the specialized organizations participating in the work include:

1. The Unit for Sustainable Development and Environment
2. The Interagency Task Force
3. The Inter-American Committee on Sustainable Development (CIDS)
4. The Meeting of Environment Ministers of the Americas

The following website provides a good overview of the political process at the pan-American level:



<http://www.summit-americas.org/Sustainable%20Dev/susdev.htm>

It has been interesting to observe several initiatives to promote CP on a regional basis. Two CP Round Tables of the Americas have been held to date, the first in Brazil in 1998, followed by a 1999 meeting in Colombia. The third CP Round Table for the Americas is tentatively scheduled for 2002, to take place in Chile. The Governmental Council for CP in the Americas (Consejo Gubernamental de Las Americas para la Producción mas Limpia) was constituted in Chile at the end of November 2001. UNIDO will act as a Technical Secretariat for the initiative that will start in 2002.

In Central America, the Central American Environment and Development Commission (Comisión Centroamericana para el Ambiente y Desarrollo del Sistema de Integración para Centro América) (CCAD) has been working on promoting regional policy coordination in various environmental areas, including environmental management and Cleaner Production. CCAD was established in 1989, and since the late nineties it has been actively promoting CP in its constituent countries. In August 2001, UNIDO and CCAD co-organized the Second Regional CP Policy Workshop in Guatemala, as a follow-up to the First Regional CP Policy Meeting, held in El Salvador in November 2000.



<http://esdev.sdc-moses.com/latin/>

SLIDE: CP policy progress in Latin America
<ol style="list-style-type: none"> 1. Experience in CP implementation since the mid-nineties, initially at the technical level; 2. Mixed picture: some countries have made impressive progress in CP policy development, others are yet to start; 3. In most cases, environmental policies need to be strengthened, while in some they need to be developed.

SLIDE: CP policy progress in Latin America/2

4. The main focus of environmental regulations tends to be on the 'green' agenda. Industrial and urban pollution still need attention [interventions];
5. The environmental regulatory framework is weak and the level of enforcement low;
6. Small and medium-sized enterprises (SMEs) predominate in industry in most countries;
7. ISO standards and certificates are becoming more widespread.

- ❖ These two slides present the current stage of national CP policy development in Latin America. There are two key messages: (a) progress in policy development has been uneven, with some countries well advanced while others have still to initiate a policy dialogue on CP; and (b) there are a number of factors that hamper CP policy development.


Background

Progress in the development of CP policy has not been uniform across the region. Some countries have already included CP into national policies. Chile and Colombia have introduced national laws on CP; Mexico's national CP policy dialogue is at an advanced stage and in Brazil regional policies on CP are being developed. Nicaragua tabled a draft national CP policy in December 2001. In many countries, however, Cleaner Production, despite its obvious economic benefits, is still not a priority option among key decision makers from government and industry, and CP promotion has yet to start. There is often a lack of information or awareness among decision makers regarding the potential benefits of CP programmes. Mainstreaming of CP (i.e. incorporating CP considerations into other sectoral policies) is the exception rather than the rule.

Leaving CP aside for a moment, it is not unusual to find a weak regulatory and institutional framework for environmental protection that needs to be strengthened or, in some cases, developed. Environmental policies and regulations often focus on the "green agenda", relating to biodiversity protection and nature conservation, and fail to address in a satisfactory manner issues related to industrial and urban pollution. The poor enforcement of environmental regulations and the relatively low cost of resources (particularly electricity and water) hamper the successful introduction of CP projects. Last but not least, in a majority of countries of Latin America, the structure of industry is characterized by a large proportion of small enterprises, where it is difficult to enforce or regulate compliance.

On the positive side, there is growing pressure from the public and the market to improve environmental performance in industry. This is especially common in countries with strong export markets, where ISO 14001 is becoming an accepted tool to demonstrate environmental performance.

■■■ MODULE 2

 1 hour

BASICS OF A NATIONAL CLEANER PRODUCTION POLICY:

- Basic concepts
- Objectives of CP policies
- Mainstreaming CP and policy integration

■■■ OBJECTIVE OF MODULE 2:

The objective of module 2 is to establish a frame of reference for CP policy development. It introduces basic concepts related to CP policy, including policy objectives, strategy and action plans. The general objectives of a CP policy, as well as the benefits of a national CP programme are presented. The module also covers the need for integration of CP into other national policies (mainstreaming) and suggests activities that could help a CP Centre increase its visibility as a national policy player.

SLIDE: What is a policy?

The term “policy” has various definitions:

1. Everything that a Government decides to do or not to do;
2. A set of interrelated decisions, including the identification of objectives and the tools to achieve them taken by a political actor(s) to address a certain issue;
3. A set of principles and directives that guide the decisions of an organization.

❖ This slide clarifies what is a “policy”, and how a “policy” relates to “politics”.

Background

A precise definition of the term ‘policy’ is a somewhat elusive task. There are a range of definitions, but most imply a “set of principles and directives that guide the decisions of an organization”. An organization can mean a business, an association, a university, a political party, or even a group of private individuals. Some common definitions of a “policy” include:

- (a) Everything that a Government decides to do, or not do, as the case may be;
- (b) A set of interrelated decisions, including identifying the objectives and tools to achieve them, taken by political actors to address a specific issue;
- (c) A plan or course of action, of a Government, political party, or a business, intended to determine and influence decisions and actions;
- (d) A set of principles and directives that guide the decisions of an organization.

Actions taken by government officials in response to problems and issues raised through the political system are known as “public policy”.

 EXAMPLE**“Policy” versus “Politics”**

One important thing to note, depending on the language of instruction, is the distinction between “policy” and “politics”. In Spanish, to cite one example, the word “políticas” refers both to policy and to politics. In English, the term “politics” refers to the overall political process in a system of governance. Some common definitions of politics include “the activities engaged in by a Government, politician, or a political party”, the “methods or tactics involved in managing a State or a Government”, and “the art of governing, especially governing a political entity such as a nation, and the administration of its internal and external affairs”. The two concepts are different and should not be confused.

SLIDE: Policy-making—two meanings

“Policy-making” is a long-term, interactive, and multi-stakeholder process to develop a framework to implement a certain policy, and to evaluate and modify its implementation on a regular basis.

It also refers to elaborating a policy document or a policy statement, such as a national CP policy. This step, however, is only a part of the policy-making process.

- ❖ This slide will help to clarify that there are two meanings to the expression “policy-making”. It should be emphasized that the seminar covers the entire policy development cycle and not only one specific step concerned with the elaboration of the policy document.

Background

The terms “policy-making” or “policy development” denotes a high-level process of formulating and putting into practice a policy, especially an official government policy. The process involves various stakeholders, is interactive and reiterative in nature, and is usually a long-term undertaking. The policy-making process also includes the periodic evaluation and verification of original assumptions and the adjustment of implementation tools.

The term “policy development” can also have a narrower interpretation when it refers to “developing a policy document”. This may take the form of a policy statement, giving a clear indication of a Government’s priorities and outlining the guiding principles to be followed in order to reach certain objectives. A good example would be a national CP policy document, which is just one of the outcomes of the policy-making process.

In the current *Manual* and throughout the seminar, the terms “policy development” and “policy-making” refer to the entire process and not simply to the elaboration of the document itself.

SLIDE: “Policy” versus “legislation”

“Policy” or “guidelines for actions and decisions” establish the setting in which an entity exists and operates.

However, “policy” is not equivalent to “regulations” or “a legal framework”, since they represent only one of a number of possible tools for policy implementation. Other tools include economic incentives, information and education, etc.

- ❖ The aim of this slide is to clarify a common misconception that a policy is equivalent to legislation.

Background

When asked the question, “What do you understand as policy?”, many people will answer that policy means a set of regulations or a legal framework. It is important to clarify that the terms policy and legislation are not synonymous.

Policies can be described as “guidelines and directives for actions and decisions” or “all the things the Government decides to do or not to do” and indeed determine the setting within which an entity exists and operates. Legislation, however, is only one of a number of policy instruments, while the term “policy framework” is broader than “regulations” or “legal framework”. These are policy tools; other policy tools include economic and financial incentives, voluntary standards of conduct, education and information, etc.

A detailed discussion of policy instruments is presented in module 4.



EXERCISE

Before presenting the three preceding slides, the instructor may want to ask participants to define, in their own words, what they understand as policy. Through guided discussion, participants should be able to grasp, and illustrate the fact, that legislation and policy are not synonymous.

SLIDE: Policy development: basic terms

Policy: a set of principles and directions that guide the decisions and actions of an organization.

Objectives: a desired situation or outcome that one wants to achieve. Objectives can be general or specific, the latter defining the necessary components to achieve the general objective.

Strategy: an outline of how to achieve identified objectives. It includes broad guidelines (‘basic principles’) to develop an action plan.

SLIDE: Policy development: basic terms/2

Action plan: specifies the steps necessary to implement a strategy. An action plan sets out what will be done, who will do it, when, with what resources, and what are the expected results.

Programmes: components of an action plan related to specific topics, such as financing, energy efficiency, sectoral initiatives, etc.

Projects: smallest operational components of programmes.

- ❖ The above two slides introduce a structure for further discussion of the policy development process. The key objective is to set up a framework for analysis that will allow easy orientation in the policy process.

Background

There is a good deal of confusion in discussing policy related matters. Terms such as policy statement, national policy plan, implementation strategy and environmental action plan are often used randomly. Although there are several possible frameworks, the one proposed here has a structured character, where each term is related to the one “above” and “below”. It will facilitate further work by creating a common reference for all seminar participants.

Policy can be expressed as a short statement or declaration that presents the issues considered a priority by the policy maker (e.g. Government).

 EXAMPLE

In the 1997 Chilean policy for the promotion of Cleaner Production, it is stated:

“Sustainable development is a fundamental strategic direction of the Government, and it has the importance of a State policy. It is based on a systematic approach that integrates three key values: firstly, a sustainable and speedy socio-economic development over a long-time horizon; secondly, protection and improvement of the state of the environment and the quality of life for the present and future generations; and thirdly, progress towards a society characterized by higher welfare, equity, democracy and public participation.”

“El desarrollo sustentable es una orientación estratégica fundamental del Gobierno de la Concertación Democrática, que tiene alcance de política de Estado. Se basa en un enfoque sistémico que integra tres criterios centrales: primero, un desarrollo económico-social de alto ritmo y sostenible en el largo plazo; segundo, la preservación y mejora del medio ambiente y de la calidad de vida para las generaciones presentes y futuras; tercero, el progreso hacia una sociedad con más bienestar social, equidad, democracia y participación ciudadana.”

 EXAMPLE

In the 2001 draft of the national CP policy of Nicaragua, it is stated:

“The Government of the Republic puts into place the National Policy for Cleaner Production in Nicaragua with the aim of contributing to the well-being and integral development of the citizens, making use of natural resources in a sustainable fashion, through the implementation of Cleaner Production in the institutional, economic and social aspects of the country.”

El gobierno de la Republica establece la Política de Producción Más Limpia de Nicaragua con el propósito de :

“Contribuir al bienestar y al desarrollo integral del ser humano haciendo uso de manera sostenible los Recursos Naturales, a través de la implementación de la Producción Más Limpia, orientada al accionar institucional, económico y social de nuestro país”.

Objectives can be defined as the aim to be achieved, either a desired situation or outcome. Objectives can be general or specific.

 EXAMPLE

The 1997 Colombian national policy on Cleaner Production identifies the general objective as:

“... To efficiently prevent and minimize the impacts and threats to human health and the environment, ensuring environmental protection, economic growth, social welfare, and competitiveness of enterprises, through the introduction of an environmental dimension in the productive sectors as a long-term challenge.”

“... Prevenir y minimizar eficientemente los impactos y riesgos a los seres humanos y al medio ambiente, garantizando la protección ambiental, el crecimiento económico, el bienestar social y la competitividad empresarial, a partir de introducir la dimensión ambiental en los sectores productivos, como un desafío de largo plazo.”

The specific objectives of the Colombian policy include:

1. Optimization of the use of natural resources and raw materials;
2. Increase in energy efficiency and the use of cleaner forms of energy;
3. Prevention and minimization of the generation of pollutant loads;
4. Prevention, alleviation, correction and compensation of negative environmental impacts on the population and ecosystems;
5. Adoption of cleaner technologies and practices of continuous improvement in environmental management;
6. Minimization and re-utilization of waste materials.

1. *Optimizar el consumo de recursos naturales y materias primas;*
2. *Aumentar la eficiencia energética y utilizar energéticos más limpios;*
3. *Prevenir y minimizar la generación de cargas contaminantes;*
4. *Prevenir, mitigar, corregir y compensar los impactos ambientales sobre la población y los ecosistemas;*
5. *Adoptar tecnologías más limpias y prácticas de mejoramiento continuo de la gestión ambiental;*
6. *Minimizar y aprovechar los residuos.*

Strategy is a broad outline of the approach to be taken to achieve the identified objectives. It includes general guidelines (basic principles or guiding principles) that will determine the composition of an action plan to implement the strategy.

EXAMPLE

In the “Basis for the National CP Policy of Chile for the period 2001-2005”, the general guidelines include:

1. The initiation of public-private cooperation for the promotion of CP;
 2. The improvement and simplification of the regulatory framework that facilitates and stimulates the prevention of pollution;
 3. The development of incentive mechanisms for CP;
 4. Capacity-building for CP;
 5. International cooperation;
 6. Activities to create a CP culture;
 7. The follow-up, evaluation and monitoring of policy implementation.
1. *Impulsar la cooperación público-privada para el fomento de la producción limpia;*
 2. *Perfeccionamiento y simplificación del marco regulatorio que incentive y facilite la prevención de la contaminación;*
 3. *Desarrollar instrumentos de incentivo a la pl;*
 4. *Desarrollo de capacidades en pl;*
 5. *Acción internacional;*
 6. *Hacia una cultura de la pl;*
 7. *Seguimiento, evaluación y control de la política.*

 EXAMPLE

In Colombia's 1997 CP policy, the strategy adheres to the following guiding principles:

1. Coordination with other governmental policies;
 2. Establishment of the Environmental Control System;
 3. Strengthening of institutions;
 4. Promotion of CP;
 5. Stimulation of internal management and self-regulation;
 6. Creation and implementation of economic instruments;
 7. Follow-up to CP policy;
-
1. *Articulación con las demás Políticas gubernamentales;*
 2. *Establecimiento del Sistema de Calidad Ambiental;*
 3. *Fortalecimiento institucional;*
 4. *Promoción de Producción más Limpia;*
 5. *Promoción de la autogestión y la autorregulación;*
 6. *Formulación e implementación de instrumentos económicos;*
 7. *Seguimiento a la Política.*

An **action plan** is a plan of activities deriving from the strategy, intended to accomplish a specific goal. An action plan defines the various steps in the implementation of a strategy (i.e. what is to be done, by whom, with what resources, expected results, etc.). It also specifies mechanisms for implementation and evaluation.

 EXAMPLE

The fourth strategy listed in the Colombian CP policy document, seeks to promote CP in the productive sectors. The following steps are proposed:

1. Dissemination of information on CP through such activities as policy dissemination, sectoral environmental guidelines, international seminar on CP, and environmental awareness-raising in SMEs;
2. Facilitating the transfer of cleaner technologies and the implementation of demonstrative projects, through activities such as the establishment of a national CP Centre, twinning programmes between enterprises, initiatives to stimulate CP in SMEs, programmes of technical assistance for companies, a scheme for waste exchanges and the improvement of financial conditions for the implementation of CP projects;
3. Introduction of CP education and capacity-building programmes, including courses on CP at universities, specialized CP training programmes in continued education, and train-the-trainer programmes for SMEs;
4. Development of a database of cleaner technologies;
5. Support for research and development in the field of CP;
6. Creation and use of mechanisms of international cooperation.

A **programme** is an individual component of an action plan, related to specific areas (e.g. institutional set-up, selection of specific materials and product categories to target in order to maximize the use of resources, etc.). There may be several parallel programmes and each can be subdivided into projects.

 EXAMPLE

In the National Environmental Policy of Mexico for the period 1995-2000, it is considered

“a priority to support the work of the Mexican Cleaner Production Centre. The MCPC will be financed from international and national sources, and will coordinate the participation and involvement of the environmental authorities, academic community and productive sector in the following areas:

1. Access to the main international sources of information on innovative environmental technologies;
2. Implementation of demonstrative pilot projects on cleaner technologies in selected industrial plants;
3. Promotion of emission and waste audits;
4. Production of technical publications;
5. Training and capacity-building programmes for Cleaner Production practices;
6. Provision of technical assistance;
7. Analysis of barriers and obstacles to the implementation of CP techniques and technologies.

El Programa de Medio Ambiente establece “como una prioridad, el apoyo que se brindará al Centro Mexicano de Producción más Limpia (CMP+L). El mismo contará con financiamiento internacional y nacional, y coordinará la participación de las autoridades ambientales, la comunidad académica y el sector productivo, en lo que respecta a:

1. *Conexión con los principales sistemas internacionales de información sobre innovación tecnológica ambiental;*
2. *Organización de programas de demostración de tecnologías más limpias en establecimientos industriales seleccionados;*
3. *Promoción de auditorías sobre emisiones y residuos industriales;*
4. *Producción de publicaciones técnicas;*
5. *Programas de entrenamiento para prácticas de tecnologías limpias;*
6. *Prestación de asistencia técnica;*
7. *Inducción de evaluaciones sobre barreras y obstáculos en la instrumentación de técnicas y tecnologías más limpias.*

A **project** is the smallest operational component of a programme proposed in an action plan, and it normally focuses on the details of one specific issue.

 EXAMPLE

In the 2001 Draft Proposal for Environmental Policy in Guatemalan Industry, an example of one specific project is the development of a Unified Environmental Permit (UEP) or Licencia Ambiental Única. The UEP is envisaged as a direct regulatory instrument, coordinated by the Ministry of Environment and Natural Resources. Mandatory for industrial enterprises, it is a prerequisite for industrial operation, and being unified or “integrated”, it will also simplify the permitting process for the company.

SLIDE: Policy development—hierarchy

Organization chart showing the basic terms
(available in the PowerPoint file only)

- ❖ This slide can be used to reinforce the message about the basic terms in policy development. It may also be used as a visual aid when discussing the examples given above of Latin American policies.

SLIDE: The objectives of a CP policy

1. The promotion of CP as a tool to improve competitiveness and efficiency, and to protect the environment;
2. The creation of conditions and incentives that stimulate businesses to implement efficient technologies and apply preventive environmental practices;
3. The optimization of the use of natural resources and raw materials, and the minimization of emissions and their impacts;
4. Reward for good environmental performance and innovative as well as proactive approaches;
5. The minimization of behaviours and practices that lead to the exclusive application of end-of-pipe technologies.

- ❖ This slide illustrates the common objectives that can be included in a national CP policy.

Background

As shown earlier, CP policies may have a variety of objectives, and the specific details will vary from country to country. There are, however, some factors common to most national CP policies.

The first aim is to promote the concept of CP as an economic tool that improves competitiveness and production efficiency while at the same time protecting the environment. In this way, it will have a support base that goes beyond environment-related institutions and organizations.

Secondly, there is a need for a framework, with both obligations and incentives, that will stimulate polluters to apply preventive environmental practices and more efficient technologies. One specific suggestion is to design some form of reward to recognize good environmental performance. Experience shows that for purposes of promotion and dissemination, an annual CP award or a round table is a very effective tool.

Another objective that features in practically all CP policies is the optimization of the use of natural resources and raw materials, and the minimization of emissions and their impacts. This can take the form of strengthening the environmental regulatory framework, promoting energy efficiency or providing technical assistance to the productive sectors.

Lastly, it is common practice to use end-of-pipe pollution controls instead of preventive techniques. This probably stems from the fact that most of today's technicians and managers were trained and educated at a time when pollution control was considered to be the right answer. Any new CP policy should now address the matter of how to minimize, wherever possible, the use of end-of-pipe measures, replacing them with preventive measures. Activities might include technical assistance programmes, technical education for professionals and financing.

SLIDE: Why have a CP policy?

From a macroeconomic/nationwide perspective, the benefits of a national CP policy include:

- Less pollution and the protection of natural resources;
- Improvements in public health;
- Less adversarial enforcement of regulations;
- Increasing economic competitiveness of industry;
- Compliance with international environmental protocols.

- ❖ This slide may be used to show the benefits of a national CP policy. The hidden goal is to motivate the audience to get involved in policy development. The key message to convey is that, given the variety of benefits, CP promotion should cover a broad group of stakeholders.

Background

A Government's task is to provide the framework for, and ensure the implementation of, sound and sustainable environmental management practices. A realistic, coherent and implementable national policy on Cleaner Production brings a variety of benefits, including:

1. Decreased pollution and the conservation of natural resources

Concrete examples include less waste dumped along roads and into riverbeds, longer life of landfills, energy efficiency resulting in decreased air pollution and lower fuel consumption, or the protection of potable water sources in regions with scarce supply.

2. Improved public health, both by minimizing acute health problems and chronic diseases at the workplace, and by avoiding the risk of environmental emergencies;

3. Less adversarial enforcement of legislation

The classic "command and control" system is adversarial and requires costly and labour-intensive enforcement. CP policy can include incentives for industry to apply CP as a part of compliance enforcement;

4. Economic savings and enhanced competitiveness of national industry.

This can manifest itself as macroeconomic savings (e.g. electricity, fuel, water, natural resources); facilitation of sound business development; improved competitiveness of local enterprises; and increasing the performance of non-manufacturing sectors (e.g. services, agriculture);

5. Meeting obligations from international protocols

CP could be an effective instrument to meet obligations from multilateral environmental protocols, such as the Stockholm Convention on Persistent Organic Pollutants, the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal etc.



http://www.unepie.org/pc/cp/understanding_cp/cp_policies.htm



EXERCISE

Keeping in mind the benefits listed above, participants could discuss the objectives and benefits of introducing a nationwide CP policy in their respective countries. Answers should be listed on a flipchart and at the end of the exercise participants should rank the benefits in order of importance. The results could be retained for reference in the following module.

SLIDE: Policy integration

Policy integration means ensuring that the CP policy being developed harmonizes with the objectives of various sectors of the economy, and that CP is promoted within sectoral policies (known as mainstreaming). This requires:

- Good analysis of existing sectoral policies
- Inter-institutional and intersectoral effort
- Strong leadership and broad support for CP

- ❖ The integration of CP with other sectoral policies (mainstreaming) is necessary if the concept of Cleaner Production is to enjoy wide application. This slide explains the concept of policy integration, why it is crucial to CP promotion and what factors are necessary to achieve successful integration.

Background

Cleaner production programmes are likely to be more effective when there is a legislative framework for environmental protection, regulation and enforcement in place to support CP. Environmental policies should take into account economic and environmental realities, and a cleaner production policy must also reflect the needs and priorities identified in existing sectoral policies.

Efforts should be taken to build the concept of Cleaner Production into the highest level environmental and other sector-specific policy documents. Prevention must be emphasized as the major principle of environmental protection. CP and preventive approaches should be included in the development of new sectoral policies. This is referred to as mainstreaming CP. Mainstreaming CP does not simply imply making a few provisions (tax rebates, permitting provisions, etc.) in the existing system. Nor does it mean enacting a brand new, stand-alone Cleaner Production act. It requires including the concept of preventive strategies in all aspects of the governmental policy framework to make it uniformly supportive and favourable to Cleaner Production.

Similarly, there is a need for policy integration, which means ensuring that a CP policy is harmonized or consistent with the various other policies in force or under development. The distorting effects of an incoherent policy framework can make Cleaner Production less effective. For instance, energy or water subsidies, the protection of certain industrial sectors from competition, or fragmented and piecemeal sectoral policies all have a negative effect on the implementation of CP. Insufficient data and information systems are also a strong impediment to the identification of priority regions or industrial sectors for action, the formulation of long-term plans and programmes to reduce pollution as well as to the monitoring of the impact and sustainability of efforts. Policy integration can occur both within the context of the price mechanism (market-based), or at the institutional level (government-based).

Consequently, Cleaner Production principles should be integrated into a range of policies, including:

- Industrial development policy;
- Foreign trade policy/customs policy;
- Investment promotion policy;
- Fiscal policy and tax regimes;
- Environmental policy;
- Energy and transport policy;
- Agricultural policy;
- Education and science and technology policy;
- Health policy.

 EXAMPLE

In the February 2000 Resolution on the National Cleaner Production Programme, the Government of the Czech Republic recommended that:

“... the Ministers of the Environment, Industry and Trade, Agriculture, Local Development, Defence, Transportation and Communications, the Interior and Education, Youth and Physical Education, the Vice-Chairman of the Government, the Minister of Finance, the 1st Vice-Chairman of the Government, the Minister of Labour and Social Affairs and Minister of Health consistently apply the principles of the National Cleaner Production Programme and introduce them into the activities of the sectors.”

Policy integration is no easy task. At the start, it requires a good knowledge of the existing and planned sectoral policies. As sectoral policies often reflect the interests of specific stakeholders, strong leadership must be exercised to ensure that the policies include preventive approaches. Strong leadership—preferably at the highest governmental level—is all the more important given that policy integration is an inter-institutional and intersectoral effort. Broad support for CP is needed to ensure the active participation of various stakeholders.

The successful integration of CP into economic and environmental policies can bring multiple benefits by ensuring that policy goals are reached at the least cost, and that the burdens which economic policies impose on the environment are fully accounted for. So far, mainstreaming of CP has become a more common practice in only a handful of countries, but the Czech Republic, the Netherlands and the United States can provide useful examples in this context.

SLIDE: Typical policies of relevance to CP

- Industrial development policy;
- Environmental policy;
- Foreign trade policy/customs policy;
- Investment promotion policy;
- Fiscal policy and tax regimes;
- Energy and transport policy;
- Agricultural policy;
- Education and science and technology policy;
- Health policy.

- ❖ This slide is a useful demonstration of the range of sectoral and cross-sectoral policies that are relevant to the mainstreaming of CP and policy integration. You may wish to adapt this slide to present the policies in effect in your own country.

Background

Governments tend to focus on economic growth and more often than not fail to consider CP and pollution prevention as a matter of national policy. On the other hand, protection of the environment and public health, stimulating industrial growth and trade and investment promotion are seen as policy issues with corresponding policy agendas. Cleaner production is perceived not as a policy issue, but rather as a technical solution. Consequently, CP concepts have not as a rule been mainstreamed in public policies related to economic activity, even though there is a wide range of policies where CP could be successfully applied.

As far as mainstreaming CP is concerned, sectoral and industrial policies could emphasize full cost pricing for energy and materials use, as well as for the manufacture, use and disposal of all products. Trade and industry policies should seek to achieve the efficient use of energy and materials for all materials processing activities (international best practice). Lastly, industrial policies should include environmental considerations. This integration can be achieved—or at least promoted—by fostering collaboration between environmental agencies, investment promotion agencies, the science and technology community and commercial banks.

SLIDE: Insertion points for CP in sectoral policies

- Improving efficiency and competitiveness;
- Economic development and investment promotion;
- Industrial development strategy;
- Tax and customs systems;
- Financing mechanisms and support schemes.

SLIDE: Insertion points for CP in sectoral policies/2

- Education and R&D policy;
- Municipal and regional development;
- Resource conservation and enforcement practice;
- Health and safety aspects;
- Activities related to national defence.

❖ These two slides show where CP can be introduced into sectoral policies. The aim is to demonstrate, by concrete example, how CP considerations can be included into other policies, so that participants realize that the mainstreaming of CP can be done in practice.

Background

Frequently, economic or sectoral policies continue to be drafted without taking into account sustainability. In some cases, policies are outright indifferent to environmental impacts that are seen as the price to be paid for economic development.

Without the support of a policy framework, that encompasses many sectors and is reflected in a combination of regulatory requirements, promotion programmes, market-based instruments and other tools, all efforts in information dissemination, awareness raising, demonstration projects and training will fail to result in the rapid adoption of CP. Conversely, CP promotion should not be limited to developing a stand-alone national CP policy, or enacting a law on Cleaner Production or pollution prevention, but rather a preventive approach needs to be included in other existing policies. Emphasis should be placed on mainstreaming CP, by integrating preventive approaches within traditionally non-environmental policy areas including industrial development, agriculture, energy policy, finance and education and research.

This goal can be achieved in a number of ways:

Improving the efficiency and competitiveness of enterprises through the adoption of CP can be included in sectoral policies related to specific industries (e.g. agriculture, manufacturing, food processing). Energy efficiency can be applied across all sectors with special prominence in energy policy. Resource pricing is a key factor, since subsidies can damage the environment by encouraging overproduction and the wasteful use of inputs.

Industrial development strategy lends itself admirably to the concept of CP. Environmental considerations in general and CP in particular can successfully be integrated into the modernization of an existing industrial base, access to more efficient technologies and privatization. Agriculture is one of the sectors of the economy where failure to integrate environmental and economic policies is often most evident. Soil and water quality, biodiversity and rural amenities are all affected by policy decisions on agriculture, such as subsidies for fertilizers, pesticides or water.

An important step towards integration is to identify the impact on the environment of economic support measures, such as subsidies. Economic development and investment promotion policy can create financial incentives for productivity and efficiency, including tax incentives and penalties, and removing subsidies for input materials of production, such as water, energy and raw minerals. Investment promotion may include preferential treatment for companies that comply with the high-level environmental standards applied in their home countries.

Economic instruments such as taxes, charges and transferable permits are important, as they can be used both for pollution control and natural-resource management, by creating incentives that bring rational economic behaviour into line with environmental goals. “Green” tax reforms can be implemented so that tax and environmental policies can become not only compatible, but also mutually reinforcing. Tax and customs systems may include preferences and incentives to apply efficient technologies and preventive environmental management. It is important to bear in mind, however, that ill-conceived tax incentives may promote end-of-pipe measures instead of CP techniques.

Financing mechanisms and technical support schemes are particularly important to the small and medium enterprise. Possible ideas include creating clusters of similar companies to receive technical support in the application of CP measures, and financing schemes adapted to the specific situation of individual SMEs.

Education and R&D policies can play an effective role in disseminating the CP concept. Opportunities include the creation of training and capacity-building programmes for CP at universities and technical vocational schools as well as institutions providing continued education programmes for professionals. It is important to create a cadre of educators through, for example, training for trainers’ initiatives.

Municipal and regional development can include CP elements in the planning and permission process, as well as the planning of waste collection or waste water treatment. A preference for regional recycling facilities, a composting plant, or a sanitary landfill—albeit not “pure” CP measures—can improve the local environmental situation.

Resource conservation will be a key entry point in regions where a given resource is in short supply. Through minimizing or preventing waste water discharges to water bodies, CP can be applied in the areas where there is a problem with the supply of drinking water.

Enforcement of environmental regulations can be an entry point for CP. In some Latin American countries, the reform of government regulations (i.e. the diverse set of instruments by which Governments set requirements for enterprises) is now high on the political agenda. The objective is not necessarily to “deregulate”, but to make government interventions more efficient, and thereby to decrease the cost burden imposed on the regulated sectors. Companies that include CP considerations in their design and operations may be given preferential treatment in permitting and monitoring.

Health and safety is an area where CP has been increasingly applied. This relates both to the indoor environmental health protection of workers and the prevention of accidents and occupational diseases, resulting in a minimization of health expenditures. There are, however, also cases of technical CP projects implemented in hospitals.

The defence sector is an interesting example of how CP and pollution prevention can be employed in a non-traditional area. The armed forces are a large-scale buyer of hardware and services, while their workshops and service outfits generate huge amounts of pollution. They are in a position to make significant economic and environmental gains through the introduction of “off-the-shelf” preventive techniques. This does not, of course, touch on the issue of combat and training activities, which are outside the traditional scope of activities.



EXERCISE

Divide the participants into groups of six to eight people, trying to ensure that each group has at least one person familiar with the policy framework. Working in groups, identify existing sectoral and horizontal (cross sectoral) policies in effect that are related to the environment and enterprise. Also discuss what other policies are currently under preparation. Identify which organizations were

involved in their planning, and how the technical policy group could monitor activities on any new policy development—in other words, how to stay informed about new initiatives. Lastly, ask participants to choose two or three concrete policies and brainstorm on what specifically could be the insertion points for CP.

SLIDE: How CPCs can be involved in policy-making

- Develop a write-up on CP benefits, including estimates of macroeconomic savings;
- Identify key players in policy-making, and build alliances to mainstream CP into sectoral policies;
- Monitor new policy initiatives and participate actively in their development;
- Lobby with Governments to sign UNEP's International Declaration on Cleaner Production;
- Organize CP events with a policy-related component.

❖ This slide offers some ideas on how a CP Centre can get involved in policy-making. It should be noted that this material is perhaps more relevant for CP Centres than for the seminar on policy development.

Background

Historically, the main priority of national CP centres has been to implement CP demonstration projects in enterprises, to build the technical capacity of CP consultants and to carry out dissemination and promotion activities. To date, most of the work has focused on company personnel and on CP consultants. Despite some joint activities with policy makers and government, most CP centres have had little to offer institutions involved in policy-making, and the credibility of CPCs as policy players still needs to be strengthened.

In fact, the CP centres themselves are not always prepared to take the lead on policy work. The areas of competence of CPC staff normally include “hard-core” engineering skills or managerial experience, and the centres have neither the experience nor the comfort level to aggressively promote CP policy-making. Overall, the general visibility of CP centres is still low among actors involved in policy development.

On the positive side, a large number of centres are located within an industrial association or chamber of industry and recently those host institutions have become more active in developing industrial or environmental policies of their own. In the past year, many centres were consulted on the drafting of national policies.

The first steps of a CP centre's involvement in a policy process could include the following activities:

1. Preparation of concise promotional material describing a CP, its importance on a nationwide level (extensive material exists on microeconomic benefits at the company level), and its advantages to a country in general and economic competitiveness in particular. It is a good idea to express in monetary terms the nationwide or sector-specific potential for CP application, based on demonstration projects that have already been implemented. It is also recommendable to show how CP can be applied successfully nationally and around the world. The CP policy brief serves as a powerful promotion tool when dealing with opinion makers.

2. Identification of “CP champions” to promote the concept of Cleaner Production. These should be high-profile individuals who are nationally recognized opinion leaders, in sectors such as industry, the communication media or the Government. They should include top-level executive officials, such as the minister of the environment or the minister of the economy. The role of CP champions is essential in alliance building; they will often be the deciding factor in the implementation of initiatives.
3. Monitoring new and relevant policy initiatives (e.g. environmental, industrial development, energy efficiency, natural resource management, competitiveness, etc.), and participate in the process of consultation and development. It may be worthwhile to declare the readiness of the NCPC to help in the coordination of work. The objective is as much to include the CP concept in the policy being prepared or modified, as to expose the NCPC itself to policy makers, and vice-versa.
4. Lobby with the Ministry of the Environment and/or Ministry of Economy to sign the UNEP International Declaration on Cleaner Production. Since the declaration is not a legally binding instrument, signing it does not require parliamentary approval. As of December 2001, signatories from Latin America included the Governments of Argentina, Colombia, Costa Rica, Mexico, Nicaragua and Panama. Once again the process of interaction with officials at the highest level—and promoting both the concept of CP and the centre—is just as important as the act of signing itself.
5. It may be useful to organize or co-organize a national meeting on topics such as the environment and economic competitiveness, where CP will be high on the agenda. Further details on this type of event are provided in the next slide.

SLIDE: Examples of CP-related events

- National CP events organized by a CP centre;
- Other national events where the centre could include CP on the agenda;
- International CP events to which relevant stakeholders can be invited to participate;
- CP awards for companies and individuals;
- Publicity campaigns on CP

- ❖ This slide suggests a number of ideas for CP-related events that will help the CPC increase its own visibility and improve understanding of the CP concept.

Background

Three good ways to quickly build up the image of the centre as a policy player are the organization of national CP-related events, participation in high-profile environmental events and the presentation of a strong CP agenda. Ideas for a CP-related event are presented below:

Annual national CP event organized by a CP centre. This method will require some financial resources (catering, hire of a conference room etc.) although the most significant factor will be the labour required to put the event together, ensure its wide promotion, and draw up a good agenda. The key to success will be a high level of participation, a well-designed agenda and exposure to the media. The event could be an ideal occasion for the Minister of the Environment and the Minister of the Economy to endorse the business and competitive advantages of Cleaner Production.

 EXAMPLE

In September 2001, the Second Mexican Round Table on the Prevention of Pollution was held in Monterrey, Mexico. The two-day event was attended by almost 300 participants, including top level Government decision makers. Five high-level panels were held, on topics ranging from policy development to financial instruments, all the way to education and awareness-raising. One third of the participants came from industrial enterprises.



<http://www.cmpl.ipn.mx/MesaRedonda.htm>

Participation in a **national environmental event organized by another institution** is an alternative option to a CPC holding its own event. It can serve as a very useful promotion vehicle provided a strong presentation on CP is made to the right audience. The advantage of this option is that less effort on the part of the CPC, and possibly a more varied participation. On the other hand, the centre has no control over the agenda or participants.

Alternatively, a meeting could be co-organized with a chamber of industry, with the Government or with a panel of influential representatives of industry and government. The meeting could take place during a national environmental, economic or trade event, and focus on ways to improve both environmental performance and the competitiveness of national industry. Good public relations coverage (media, press releases, etc.) is highly desirable.

Participation in **international CP events** is a further option. The drawback is that a limited number of national participants can take part owing to the budget considerations, unless the meeting is being held in the country where the CPC operates. When coordinating national participation in international events, it is useful to take a careful look at the composition of the national delegation in order to maximize the potential for action and to follow up in the country upon return. For instance, during the October 2001 meeting on Ecoefficiency and Industrial Competitiveness in Latin America in Cartagena, Colombia, the Minister of Environment of Nicaragua signed the UNEP International Declaration on Cleaner Production.

 EXAMPLE

In August 2001, the Second Regional CP Policy Workshop took place in the City of Guatemala. The event, jointly organized by the Central American Commission on Environment and Development and UNIDO, was attended by over 60 participants from nine countries in Latin America, representing government, business and academia as well as NCPCs. The workshop included a presentation of priority sectors for the application of Cleaner Production in the countries of Central America and the development of action plans for CP policy development in each country in the short term, until the end of the year, and in the long term, until the year 2005. Discussions were also held on ways to stimulate regional cooperation and coordination in the development of CP policies, as well as how to identify possible projects for regional cooperation in the field of Cleaner Production.

An **award ceremony that** gives recognition to individuals and institutions promoting the concept of CP and preventive environmental management is also a useful tool. At the same time, it gives publicity to successful cases of CP implementation in industry, increases the visibility of the CPC itself and provides CP centres with a way to reward collaborators and working partners and to strengthen alliances.

 EXAMPLE

In December 2001, a second National Meeting on CP was organized in Managua by the Nicaraguan CP Centre. The half-day event, attended by 90 participants, was opened by the Minister of Economy. The meeting was televised and four companies received CP awards for the successful implementation of CP in industry. Several other awards were presented to prominent individuals involved in CP implementation and policy-making.

Lastly, a **publicity campaign** can be organized to promote the concept of CP and lend publicity to successful cases. An interesting example is the “Month of Cleaner Production” held in Chile.

 EXAMPLE

A “Month of Cleaner Production” is one of the instruments used to strengthen the public impact of CP activities in Chile. The initiative was started in 1997 and to date, more than 4,000 people from industry, government and academia have participated in the activities. Activities are not limited to the capital city, and include regional events.




<http://www.pl.cl/index.html>



EXERCISE

This short exercise helps to determine what CP-related events could be organized by the centre, or the policy development group. Divide participants into groups of not more than a dozen people each. Identify important stakeholders and target groups. Invite the group to consider with whom such an event could be co-organized. What could be the most interesting topic for those partners? List concrete ideas on how to organize a CP event within existing events (e.g. piggy-backing CP events on any traditional event, such as an annual trade fair), or as new individual events.

■■■ MODULE 3

 3 hours (8 hours with the exercise)

CP POLICY DEVELOPMENT CYCLE:

- Sequence of steps in the CP policy process
- Setting up the basics for CP policy development
- Role of stakeholders
- Developing and implementing CP policies
- Monitoring and evaluation
- Common obstacles to CP policy development

■■■ OBJECTIVES OF MODULE 3:

Module 3 presents the policy development cycle, as a structured approach, based on a sequence of steps. From an overview of the requisite start-up conditions for successful CP policy development, it leads to the specific actions that need to be taken, including stakeholder analysis, evaluation of the existing situation and the setting up of a steering committee and a national CP policy development group. It analyses the additional steps in the policy cycle, from identifying priorities and key objectives, policy formulation and implementation, to the monitoring and evaluation of CP policy effectiveness. The module also provides an overview of the main obstacles to successful CP policy development.

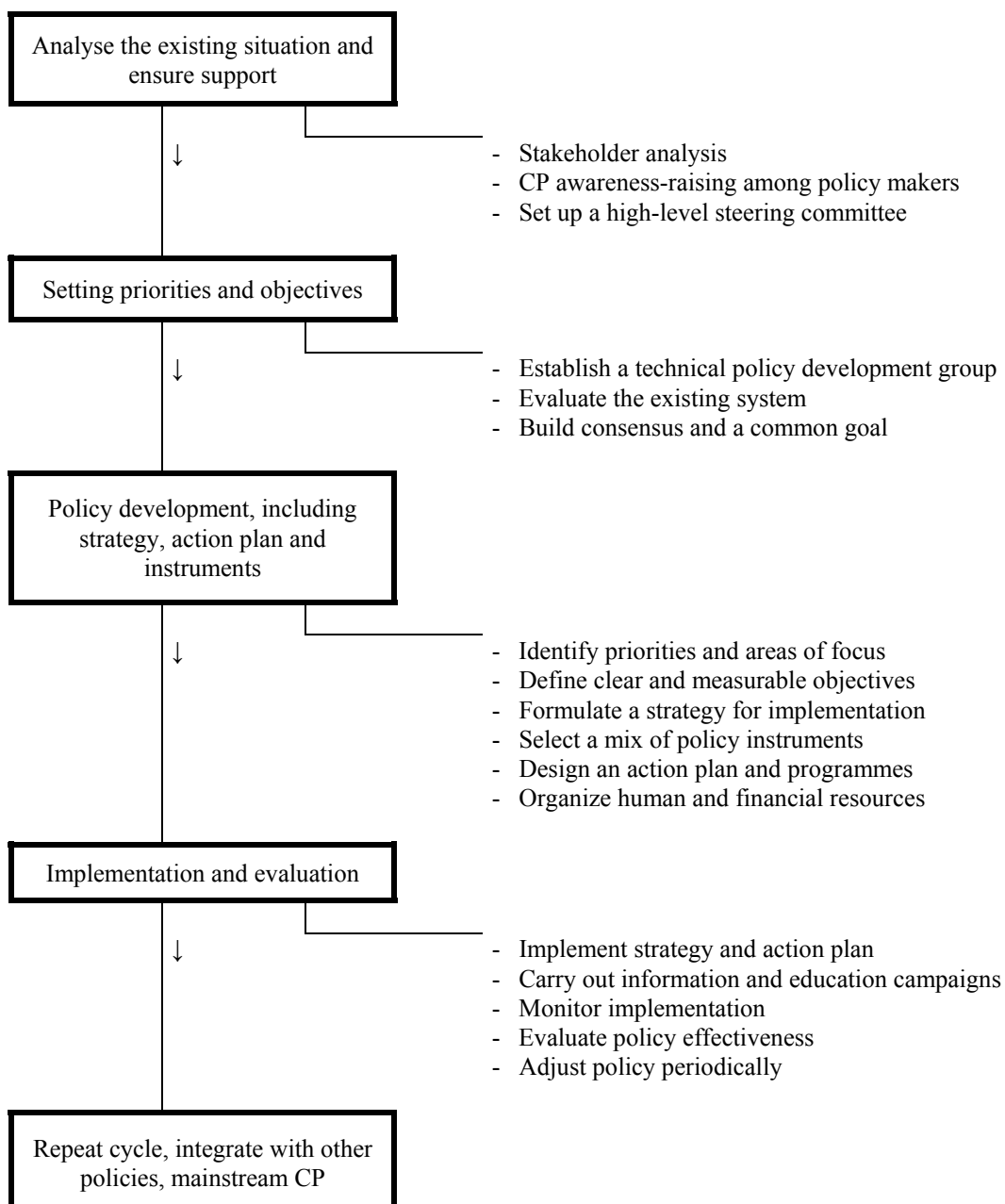
SLIDE: General policy development cycle

- Analysing the existing situation and ensuring support;
- Setting priorities and objectives;
- Policy development, including strategy, action plan and instruments;
- Implementation and evaluation.

❖ The starting point is the introduction to the general policy development cycle. The purpose of this slide is to show that the various steps are logical and based on the political process. Specific steps in CP policy development are discussed in detail throughout module 3.

Background

In general, the CP policy development cycle consists of four distinct stages:



STAGE 1: Analyse the existing situation and ensuring support

As a first step in the development of a policy, the issue or problem that requires policy intervention should be identified. This is usually done by a single institution or organization (or by private citizens), for whom a specific issue is important. The originator usually carries out an initial analysis of the current situation to take stock of what has already been done and who are the stakeholders. It is, of course, crucial that the importance of the issue be recognized by policy-makers, since only then will it be placed on the agenda. Once this is achieved, the policy development process can begin. This often involves setting up a special high-level political coordination mechanism to formalize and coordinate efforts. The rationale for the establishment of a steering committee is to ensure political support and access to decision makers.

STAGE 2: Setting priorities and objectives

The next stage is the formation of a technical CP policy development body. Unlike the steering committee, the technical policy development body should be drawn from a broader inter-institutional and multi-stakeholder group and should include technical experts who are not necessarily high-level political decision makers. The role of the technical policy group is to analyse the existing situation, looking for barriers and support factors for CP, before identifying the needs and priorities to be addressed.

STAGE 3: Policy development, including strategy, action plan and instruments

After the priorities have been agreed, a programme should be developed to address the issue under consideration and come up with a solution. This is known as policy formulation and may take a long time, particularly if the issue is complex or controversial (e.g. involves opposing interest groups). The development of the action plan and the choice of policy instruments can also be time-consuming. After the technical policy group has reached a consensus on the formulation of the policy and action plan, it now has to be endorsed by the steering committee (see stage 1). Sufficient backing has to be obtained, generally within the Government or in a legislative body, to support a specific policy. The steering committee may also choose to open the action plan for consultation with other stakeholders, a process that may involve lobbying and negotiating on the part of legislators and executives as well as affected stakeholders.

STAGE 4: Implementation and evaluation

The next stage is policy implementation, or carrying out the action plan to meet policy objectives. Implementation must also include a monitoring component in order to assess what is successfully being done and what modifications and changes still have to be made. The final step is policy evaluation and adjustment. This means looking at actions and programmes to see whether goals have been achieved, or to assess a policy's effectiveness and efficiency. Those elements that have not worked need to be changed, or new issues may have to be addressed. At this stage, the policy development cycle may well begin anew, possibly involving CP mainstreaming and integration with other policies.



PROPOSED EXERCISE FOR MODULE 3:

NOTE: Unlike other exercises in this Manual, the suggestion below is not for a single exercise on one specific step in policy development. Instead, it is a proposed set of exercises that could form the basis of a one-day workshop on policy development. Should this not be the objective of a session, however, individual exercises are provided in the slides throughout module 3.

Divide participants into small groups of not more than six persons. Each group should go through the main steps in the policy development cycle. The steps are limited to four in the interests of brevity.

Step 1: Analysing the existing situation and ensuring support

POSSIBLE INTERACTIVE EXERCISE: Decide who are the most important stakeholders for CP and how they can be involved in CP. Identify the sectoral policies, barriers and opportunities for CP in your country. (2 hours)

Step 2: Setting priorities and objectives

POSSIBLE INTERACTIVE EXERCISE: Identify three priorities for your CP policy, with measurable objectives. (30 minutes)

Step 3: Policy development including strategy, action plan and instruments

POSSIBLE INTERACTIVE EXERCISE: Develop an action plan for one selected priority within the CP policy, including two or three specific instruments. (2 hours)

Step 4: Implementation and evaluation

POSSIBLE INTERACTIVE EXERCISE: As part of the action plan, discuss how to include new stakeholders into policy development. How would you evaluate effectiveness of the policy? (30 minutes)

SLIDE: Policy-making: general observations

- There is no one single “right” way of policy-making;
- Policy-making is a long-term repetitive process;
- Regular evaluation and modification are necessary;
- As many incentives as possible should be included.

- ❖ This slide introduces three important characteristics of the policy development process: (a) it is a long-term undertaking, involving substantial negotiation and trial and error; (b) there is a need for built-in flexibility to modify and adjust the approach; and (c) there are no universal solutions: each country has to develop policy in a way that meets its own needs and conditions.

Background

There is no single correct way to develop CP policy. Every country must develop its own approach reflecting local priorities and objectives, political traditions and specific needs. While certain general principles should be observed, the actual process and details will vary from country to country.

First and foremost, CP promotion does not belong to any single government institution. CP is a cross-cutting, multisectoral issue that needs to be integrated into various sectoral policies. Relevant activities may include, for instance, industrial development, institutional capacity development, education and promoting policy dialogue. Environmental and relevant non-environmental agencies may need to be strengthened, especially in their CP capacities.

Policy development is also an interactive and time-consuming process. As noted above, it is sensitive to political changes. Results tend to be slow and expectations must consequently be realistic. Since activities need to be planned over a long-term horizon, industry requires a transition period to allow it time to adapt to policy instruments.

It is essential to include an effective mechanism to monitor progress and evaluate the effectiveness of the policy and its instruments. It is practically impossible to get everything right the first time, and modification and adjustments will be needed to adapt the approach to the needs.

Finally, experience shows that it is beneficial to include as many incentives as possible. Pure coercion is rarely effective, and it is much better to provide the “carrot” of economic instruments and information-based instruments at the same time as the “stick” of environmental regulations. It is useful to keep in mind that prevention and good design right from the start is three to five times cheaper than retrofitting.

SLIDE: Basic conditions for CP policy development

- Political will and the interest of stakeholders;
- General environmental awareness and pressure of public opinion;
- Policy continuity and stability;
- Broad local ownership of the process and support at the highest level;
- Market conditions and ownership that encourage a reduction in production costs;
- Integration and mainstreaming of CP into non-environmental policies;
- Institutionalization of CP: a strong and active CP centre.

- ❖ Using this slide, present the conditions that are necessary or desirable for successful CP policy development. You may want to return to these basic conditions at the end of module 3 when discussing the obstacles to policy development.

Background

There are a number of preconditions for successful CP policy development. First and foremost is the political will and interest of stakeholders. This is crucial since there will be times when decisions to be taken are controversial or go against the interest of certain groups. For instance, any increase in the price of resources and energy, while creating an incentive for their more rational use, is likely to be opposed by industry.

Experience also shows that CP and preventive environmental programmes are more likely to succeed in countries where there is an adequate level of environmental awareness. The ensuing pressure of public opinion spurs companies on to adopt sound environmental practices.

Policy development calls for continuity and stability. During an election or change of government and legislature, policies are frequently changed or reversed. While this situation remains to a large degree beyond the influence of a CPC, in an effort to minimize its impact, a CPC could seek support for the concept of CP, based on a broad ownership of the policy process. A CPC may wish to support local political parties that are willing to include environment and CP in their programmes.

Cleaner production is a concept that calls for understanding and approval by society as a whole. In order to publicize it (let alone mainstream it) successfully, a broad coalition needs to be formed that will draw various stakeholders into the effort. The advantage of this approach is that it makes the policy process less sensitive to political change. While Governments may be reorganized at the time of elections, more often than not the work of the private sector, associations of industry, academia and non-governmental organizations (NGOs) is largely unaffected. Building a coalition of these sectors and ensuring their support prevents the paralysis of a policy process as a result of a political reshuffling.

CP policy development should be supported by the most senior level of decision makers. The backing and/or participation of a government minister, the chairman of the environmental commission of a national assembly, or the president of a chamber of industry, can often determine whether or not a CP programme results in a supporting policy.

Both the ownership structure and existing market conditions should create incentives to reduce production costs. State subsidies for resources or protectionism in favour of State-owned and -managed enterprises, for example, do not give the right signals to promote efficiency. CP is even more efficient when it is also integrated into non-environmental policies, for instance, by promoting CP as a tool to improve competitiveness. The mainstreaming of CP is considered the most effective way to achieve both environmental and economic benefits and to create conditions for its sustainable application.

Finally, the role of the CP centre itself cannot be overestimated. If it is to have any impact on policy, a CP centre must be strong and active and enjoy the full support of its stakeholders. NCPCs have several natural attributes for the policy role. The fact that a CPC is rarely located within a government structure nor is it an individual consultancy, lends CP centres their independent and non-partisan character. Provided a CP centre is able to build a sufficiently high profile, it is likely to be acceptable to a variety of stakeholders.

SLIDE: Specific steps in policy development

- Stakeholder analysis;
- CP awareness-raising among policy makers;
- Setting up a high-level steering committee;
- Establishment of a technical policy development group;
- Evaluation of the existing system;
- Building a consensus and common goal;
- Identification of priorities and focus areas;
- Define clear and measurable objectives.

SLIDE: Specific steps in policy development/2

- Formulation of a strategy for implementation;
- Selection of a mix of policy instruments;
- Design of action plan and programmes;
- Organization of human and financial resources;
- Implementation of strategy and action plan;
- Information and education campaigns;
- Monitoring of implementation;
- Evaluation of policy effectiveness;
- Periodic policy adjustment.

- ❖ This slide presents a roadmap for CP policy development and the proposed step-by-step approach is discussed in detail throughout the rest of the module. It is a more detailed version of the four-stage policy development cycle introduced in the first slide of module 3.
- ❖ You may wish to return to the roadmap if a session is long or detailed (e.g. it covers in depth several steps). A visual presentation will help the audience keep in mind the general policy development cycle. It may be a good idea to hand out the flow chart from the first slide in module 3, to help participants follow the different steps.

Background

Presented in the slide is a generic step-by-step approach, which will help meet the conditions necessary for the successful implementation of CP. The aim is:

- To create a common understanding of the Cleaner Production concept;
- To incorporate CP within the governmental policy framework;
- To integrate the concept of CP into the policies and operations of enterprises;
- To develop indicators to measure progress in the implementation of CP policies and the achievement of targets;
- To provide education and training at all levels;
- To supply information about the technology involved as well as the environmental management tools needed;
- To integrate the environmental dimension and CP into education;
- To assist key relevant institutions in policy development.

While the scheme is generic, and the approach will have to be adjusted in detail to the needs and conditions of each country, the sequence of steps has been proven to be valid by several countries that followed this path.

It should be noted that the roadmap omits one step, namely the identification of the need for CP policy development by one actor or institution. This is assumed to be the task of the CP centre.

SLIDE: Stakeholder analysis

- Describe what is meant by “stakeholder”;
- Begin policy work with a stakeholder analysis;
- Discuss which institutions and organizations have an interest in CP and the role they can play;
- Consider the needs, motivation and interests of stakeholders;
- Identify key individuals.

- ❖ It is essential to clarify the term “stakeholder” since the English word does not translate easily into all languages. During the process of analysing stakeholders, in addition to determining who they are, it is important to identify their interests and motivation. Finally, the importance of influential individuals in the policy development process needs to be highlighted.

Background

As can be seen in the analysis of basic conditions for policy development, no single organization can successfully develop a CP policy on its own. While a CP centre, department of the ministry of environment, or an industrial association could indeed develop and submit a policy paper alone, to create broad-based support, initiate implementation, and be successful and sustainable requires a multi-stakeholder effort.

 EXAMPLE

What is a stakeholder?

The term “stakeholder” refers to an organization, institution, group or even an individual who has a vested interest in a certain issue. The “stake” is that the issue has an impact on them—be it a benefit or a loss. Stakeholders do not necessarily have the same goals or positions. They can, for instance, have opposing interests, be active or passive, have a decision power or only be affected by decisions. The term is commonly used interchangeably, albeit somewhat erroneously, with “players” or “actors”; the term “stakeholder” refers to those parties who are affected by an issue, and not only those who are actively involved. The closest term for “stakeholders” in Spanish is “actores involucrados”.

CP centres are well placed to bring together various stakeholders in planning Cleaner Production. Such a multi-stakeholder group could include the ministries responsible for the environment, economy and industry, energy and public health; chambers of commerce, industrial associations, universities and research institutions; local governments; consulting and environmental service providers, NGOs and other interested parties.

The first step in policy development is stakeholder analysis. The objective is to review the institutional landscape in which the CP Centre or programme has to operate. In other words, the key question is to identify as many institutions and organizations as possible with a potential interest in CP, consider why they are important and what role they can play, and finally, to rank them and select a smaller number of influential, priority ones. This exercise is not only important for policy work but also for the general market position of the CP Centre or programme.

This being the first step in the process, the CP Centre may only have a few allies. At this stage, the staff of the CP Centre should all participate in planning, through internal discussions and brainstorming sessions. It is desirable to identify three or four trusted persons from external

institutions participating in the development of other national policies, and, together with them, to brainstorm on the correct approach to CP policy development and on stakeholder analysis. Another option is to interview the members of the Centre's Advisory Council and Executive Board on the issue. It is assumed that the CP Centre is developing policy. Naturally, if the Government decides to develop a policy on its own the Centre should seek active involvement and participation.

In any analysis, it is important to ensure that the identified stakeholders are not limited to one ministry or government agency. An identification of stakeholders should take into account why the stakeholders are important, what role they could play and which of their needs and interests could be met through participation in the policy development process. The truth is that no high-level policy player will participate in someone else's programme unless they see a benefit for their own organization. It is, therefore, crucial to try to consider CP policy development from the stakeholder's perspective and to appreciate what motivates each stakeholder.

The role of key individuals should not be overlooked. It is not the institution that will be participating in CP policy development, but rather Ms. X or Mr. Z from that institution. This means that even the most powerful institution will not effectively support CP policy if a junior officer—with no access to decision makers—is selected to participate in the effort. The policy group will be in a position to claim that the institution has participated in the work, but in practical terms, access to top level decision makers is imperative.

SLIDE: Stakeholders and their contributions

- National government;
- Legislative branch;
- Enterprises and plants;
- Chambers of industry and sector-specific associations;
- Environmental service providers and CP consultants;
- Universities and the education sector;
- Financial sector;
- Non-governmental organizations;
- Cleaner Production Centre/CP institutions;
- International organizations;
- Municipal governments;
- Trade and labour unions.

- ❖ Previous slides stressed that a multi-stakeholder approach is important. Using this slide, demonstrate to participants why participation of various stakeholders is important and the valuable contributions that they can all make in the CP policy development process.

Background

Policy-making has traditionally been a government-dominated field, involving a small and sometimes hermetic group of players. This situation has started to change in the last two decades, especially in fields such as environmental protection, where different interests come into play and the general public has a strong say. CP policy development needs the support, inputs, and participation of different players. The potential role and contribution of the most important ones are discussed below:

National government (i.e. central government, as distinct from local authorities) has the capacity to develop legislation and a regulatory framework, and to set goals and establish policies. Government actions can eliminate policy incoherence and provide incentives for CP. A Government can provide targeted assistance to overcome key obstacles, and offer technical assistance or funds for other CP-related agencies. The latter includes strengthening enforcement authorities, provided there is the political will to enforce environmental regulations. Last but not least, the Government can invite other stakeholders to participate in policy development.

The legislative branch, including members of parliament, has a strong influence in determining environmental priorities and the general direction of policies. Any fundamental changes to, and updating of, a regulatory framework will require the support of the legislative branch. Lastly, through their network of contacts and alliances, legislators can be a good avenue to gather support for the policy process.

Enterprises and individual plants are the main implementing agents for CP, and communication with them is essential. Enterprises, and specifically their managers, need to make a commitment to continuously improve their environmental performance, and to develop capacity for CP and implement CP projects. Most important, they should also be prepared to share results, including a demonstration of financial benefits, a somewhat sensitive issue in the commercial sector.

Industrial interest groups, such as business and engineering associations, or sector-specific organizations, have a crucial outreach to individual enterprises. Industry associations can improve the dissemination and exchange of information among their members on successful CP experiences. They can help persuade senior managers to take up CP and adopt better environmental management practices. Finally, they represent the business community in developing the policy and regulatory framework.

Environmental service providers and CP consultants implement CP technical projects in enterprises. Recently, they have often been involved in the preparation of financing proposals for CP projects, and in promoting and marketing the CP concept with industry. One important group of environmental service providers includes those involved in environmental management systems (EMS) and local eco-label and certification schemes, as they are in a position to support—or oppose—the promotion of Cleaner Production.

Universities and other educational institutions form and educate future managers. Their impact is strong over a medium-term horizon. In the short term, they can integrate environmental management and CP principles into their curricula and provide short courses for current professionals in their continuous education programmes.

Financial institutions have, in recent years, been able to improve their understanding of CP investment. The financing sector is in a position to include environmental aspects in lending evaluations, broaden their lending instruments to support CP, and finance investments in CP and efficiency improvements. Insurance companies can promote CP through insurance incentives.

Non-governmental organizations can raise awareness of CP and introduce an element of public pressure and accountability. Additionally, provided they have the necessary technical capacities and skills, they can implement voluntary activities on a local level. For example, a number of waste minimization programmes have been initiated or managed by NGOs.

Cleaner Production Centres have traditionally been responsible for the identification and preparation of small CP investment projects, and for organizing education and training events. In the policy context, CPCs can play an advisory role to the Government, and be an independent intermediary with stakeholders.

International organizations can provide guidance and expertise on CP and policy development matters. They can also be effective in mobilizing national efforts to develop a CP policy. In this respect, international organizations are important thanks to their access to decision makers, familiarity with other ongoing programmes, and a potential ability to support financially some aspects of the process.

Municipalities are an increasingly important group of stakeholders, because local CP programmes can be an effective tool to improve their environmental performance. Some municipalities develop local CP policies, while others have initiated “cleaner region plans” jointly with other stakeholders, including industrial ecology and eco-industrial parks.

Labour organizations and trade unions have in some cases shown increased interest in CP, as a result of their own concern for health and safety at the workplace.



EXERCISE

Divide participants into small groups of five to eight people, preferably from different sectors. Each group should choose a person who will report on its behalf. The groups should be given 15 minutes for discussion and asked to identify on a flipchart the stakeholders in CP policy development. Answers should be as specific as possible (e.g. “Confederation of Commercial Banks and Insurers” rather than simply “Financial sector”). At the same time, it is important to stress that there are no bad ideas and that all suggestions should be written down. During the second half of the exercise, each group should select half a dozen priority stakeholders, whose participation in policy development is crucial. Ask the group to justify why those specific stakeholders were considered important. You may also wish to ask the group to specify who in each priority organization is the individual they consider most appropriate as a contact person.

SLIDE: CP awareness-raising among policy makers

- Provide a write-up on CP and its benefits for the national economy and environment;
- Propose a good starting point to create interest;
- Interview key players to present CP and its benefits;
- Ask for their willingness to support the concept of CP and to participate in policy development.

- ❖ In this slide, demonstrate that gaining the support of top-level decision makers is a process that requires good preparation, an interesting starting point to draw their attention, and recognition of the needs and interest of the actors.

Background

The concept of Cleaner Production and of a preventive environmental approach is often misunderstood and CP is confused with waste treatment or other end-of-pipe technologies. Many policy makers consider that companies operating in the environmental industry are so-called Cleaner Production or clean technology companies. This includes providers of waste treatment facilities or pollution control equipment.

A positive attitude towards, and improved knowledge of, Cleaner Production are critical for its adoption. CP promotion has to cover a range of related activities, in addition to technical demonstration projects. The goal is to create an understanding of the financial and environmental impacts of inefficient resource use, an awareness of managerial and technical avenues for

improvements and a willingness to modify existing methods. Most important among these awareness-raising activities are:

- Human resources development of personnel at various levels in the stakeholder groups;
- Awareness-raising campaigns, targeting industry, government, financing institutions, academia and NGOs;
- Compilation and dissemination of up-to-date information on Cleaner Production practices and technologies in a user-friendly manner, addressing specific local needs.

Awareness-raising among senior decision makers differs from the dissemination of general information on CP. Gaining access may be difficult, e.g. scheduling a meeting with the Minister of the Economy or the President of the Republic. Their interest may be limited to issues of direct interest to the institution they represent. The interview with the decision maker may be very brief, and he or she may not have a technical or economic background, or be familiar with environmental issues.

For this reason, it is worthwhile to prepare a concise promotional description of CP, its importance and how it can benefit the country in general, and economic competitiveness in particular. The write-up should be brief, substantive and targeted to the needs and interests of the particular player. For instance, if the Government is in the process of drafting an industrial development policy, the competitiveness aspect should be stressed. In dealing with an industrial association, it may be appropriate to emphasize the economic and environmental benefits for members.

It is useful to choose a starting point that will stimulate the interest of stakeholders. One very effective approach is for the interviewer to present in monetary terms the nationwide potential for CP application in his or her own country. This may be a good estimate rather than hard science. There may be a specific priority sector on which to focus the effort such as highly polluting sectors, traditional exporting sectors, or sectors otherwise declared as a priority in national policies, and this would be a good place to start. Potential savings for that entire sector should then be calculated, based on the size of industry and on the average savings from individual CP projects in that particular sector. An extrapolation of this kind, using conservative estimates based only on good housekeeping measures, usually results in potential savings of tens of millions of dollars annually.

The next stage is an interview with high-level people in the key institutions identified during the stakeholder analysis process. There will be three objectives to this meeting: to learn about their needs and motivations, to increase their awareness of the CP concept and its benefits, and to arouse their interest and gain support.

An initial meeting of 30 to 45 minutes could include a short presentation of the benefits of CP, the activities of the specific CP Centre, and the global CP programme. Key players should be offered a well drawn up outline of the benefits of CP for the national economy as well as for their organizations. It is vital that the decision maker recognize the advantage of the preventive approach as an alternative to end-of-pipe pollution control.

The next step is to ascertain the needs and concerns of the particular institution and to determine whether the concept of CP is an interesting one. Concrete suggestions that might spark a discussion include: Could a national round table on competitiveness be a good idea? Would the institution participate in this initiative as part of the Steering Committee? Who else might be recommended to be a part? What other recommendations can the institution offer? The experience of the Mexican CPC shows the effectiveness of an open-ended and flexible approach of this kind, even with players at the most senior level.

In addition to the highly targeted approach presented above, informal and formal meetings, conferences and seminars, and public hearings for policy drafting can also be used for CP awareness-raising. Much depends on the experience and credibility of the NCPC in this process. The higher its credibility, and the more informal contacts the staff of the NCPC maintains with policy players, the faster CP awareness can be built. The message has to be repeated a number of times before it is well understood.

As noted earlier in module 2, participation in conferences and seminars or public consultations on new policies can be useful for building contacts and gaining experience, since they are also attended by policy makers.



EXERCISE

Divide the participants into groups of six, and in each group select three as CP sceptics and three as CP promoters. For the priority stakeholders (identified in the previous section) consider their influence on the political process, and the interest they could have in CP. Identify the factors that can lead to the recognition of Cleaner Production as an important tool in their area of interest. Finally, for each priority stakeholder, identify three reasons for CP. Present these to the sceptics and try to convince them of the benefit of CP.

SLIDE: Setting up a high-level Steering Committee

- Establish the rationale for two different groups for policy development;
- Gain access to decision makers;
- Provide guidance and oversight for the technical policy development group;
- Refer to the UNEP International Declaration on CP.

- ❖ With this slide, present the rationale for two separate groups on policy development. The key message is that the Steering Committee will provide overall guidance and political support at the highest level, while the technical policy development group will be responsible for expert work and drafting the technical and operational details.

Background

It is recommended to have two separate groups involved in CP policy development. The high-level Steering Committee will provide senior political support and guidance, while the technical policy group, consisting of mid-level experts from the participating institutions, will focus on drafting the technical and operational details. The roles and activities of the two groups are thus clearly distinguishable from one another.

The Steering Committee should include representatives of those stakeholders who expressed interest and support for CP and policy development. Ideally, high-level actors should include representatives of Ministries of the Environment and Natural Resources, the Ministry of Health (generally responsible for permitting and monitoring) and Ministries of Economy, Industry and Commerce (directly responsible for policy development). The business sector should be represented, perhaps through participants from business associations or a chamber of industry. A link to the National Assembly could be provided by the participation of a parliamentarian working in the Environmental Commission of the National Assembly. Other players may also be included; in this context, suggestions provided by key players during the first meeting could be of value.

It is vital from the policy development standpoint to maintain access to those with the power to initiate action. However, in addition to ensuring political support, the Steering Committee will also provide general guidance on possible policy direction and approaches. For example, the Steering Committee could oversee and endorse the work of the technical policy group, the latter providing specific expertise that the Steering Committee may lack.

One interesting way of creating awareness of CP and ensuring the involvement of senior government actors is to lobby for the country's signature of the International Declaration on Cleaner Production (see section in module 1 for further details).

SLIDE: Establish a technical policy development group

- An expert group representing key stakeholders;
- The right size and composition;
- Clear mechanisms for coordination of work, with well defined functions and objectives;
- Communication with decision makers.

- ❖ A technical policy development group is the focal point of the daily effort. The main points to make are that the composition and size of the group should be appropriate to ensure the smooth coordination of the work of the group. Mechanisms, functions and objectives need to be clarified at the outset. Finally, communication needs to be maintained with the Steering Committee.

Background

The successful introduction of CP is not a matter of isolated efforts on the part of individual institutions. The key is the coordination of activities to introduce the concept to various sectors of society (industry, government, financial institutions, technical colleges, universities etc.) and at different levels, namely micro (e.g. companies and local enforcement agencies), intermediate (industry organizations) and national (environmental policies). Typically, these issues have several dimensions, including political and institutional, economic, scientific and technological ones.

Members of the technical policy development group could be considered as policy advisers who focus on the collection of information, its analysis as well as the development of policy options for consideration by the Government and a wider consultative forum. Meanwhile, the Steering Committee will comment on draft technical proposals and will be charged with keeping CP on the policy agenda.

The main consideration for the technical policy group is to include all interested and important stakeholders, but at the same time to find the right balance between the number of stakeholders involved and the ability to coordinate the work. On the one hand, the greater the number of stakeholders who participate, the broader the support for the effort and the better the outcome. Stakeholders need to be involved from the start when formulating and introducing integrated policies. On the other hand, above a certain threshold the process becomes unwieldy and simply scheduling meetings and working in a group becomes difficult. There is no simple solution to this dilemma. Experience shows that at the early stage it may be practical to keep the number of participants to around 12.

The technical group will include representatives of the institutions participating in the Steering Committee, but does not need to be limited to those. If the enforcement of regulations is the domain of

specialized institutions (e.g. the Environmental Inspectorate, the Environmental Protection Agency, the Environment Impact Assessments Office), their participation and views would be valuable. A person with a legal background and familiarity with the policy-making process would be a great asset. Last but not least, it could be useful to include a representative of environmental service providers, to provide the perspective of the environmental consultants.

Once the group is formed, it is recommended that it clearly define at the outset the functions and objectives of the group and the mechanism for coordinating its work. General objectives should be discussed and agreed upon, such as: “To prepare within twelve months a draft national CP policy for approval by the Government”; or, “Integrate CP into the industrial development policy”. At the close of each meeting, it may be good practice to draw up the agenda for the next meeting, and to agree on its date and place. If participants have different backgrounds and little experience in CP or the environment, it might be useful to provide some capacity-building on CP and policy tools.

Practice shows that most of the work in the initial stage of policy development is done by the CP Centre and the hired experts. Some CP Centres have organized this stage of their work as a separate project, permitting them to hire experts on sectoral policies where needed. Expertise on policy development and analysis, sectoral policies, and law and policy instruments have all proven particularly useful. CP Centres are also in a position to involve all stakeholders and can take responsibility for a number of logistic, training, information and secretarial functions.

It may not be realistic to rely initially on the Government to lead the process. In fact, the strong intervention of the Government might actively discourage the voluntary participation of some sectors. However, it is essential that one entity accepts responsibility to act as coordinator to encourage the many stakeholders to carry out their roles and to help foster cooperation among parties with occasionally conflicting agendas.

As mentioned earlier, the key point in the composition of the technical group is to gain access to those persons within stakeholder institutions who have the power to make decisions. It is unlikely that a deputy minister or a department director will participate in person in the work (instead, they should be members of the Steering Committee), but it is also counterproductive to expect a meaningful contribution from a junior specialist hired fresh out of college. This is why the proposal was made for a Steering Committee and a separate technical working group. Nevertheless, it is essential to maintain communication between the technical policy working group and decision makers in the Steering Committee.

It is important to give recognition to excellent performance and genuine effort on the part of participants. A well deserved verbal compliment or a short memo to a superior with words of praise for his or her representative (and perhaps an update on the progress of CP policy development) would be useful.

SLIDE: The importance of individuals in the policy group

- Highlight the role of “CP champions” and opinion leaders;
- Cultivate relations with media leaders;
- Seek influential “independent” individuals.

- ❖ It is important to stress that both policy groups consist of people who represent their institutions. The support of individuals at the most senior level is crucial to ensure the leadership and ownership of the process. Active and credible CP champions and the participation of opinion leaders, including independent experts, are vital for policy development.

Background

Leadership is essential for the development and implementation of CP policy. Someone aptly noted that “Even a poorly designed instrument of public policy, well led by politically influential individuals, may achieve more than a brilliantly conceived policy with no backing.”

It is imperative that top players in the target sectors recognize the importance of CP and that key persons within individual organizations be prepared to endorse the concept. The active involvement of a strong and credible local actor (a “CP champion”) can encourage a shift in attitudes towards Cleaner Production by influencing other opinion leaders. These local actors should be high-profile individuals who are nationally recognized opinion leaders in sectors such as industry, communications and media or the Government. The role of CP champions is essential for alliance building.

CP champions from industrial organizations, business councils or productivity councils are particularly suitable, as they can achieve a multiplier effect by disseminating information and lessons learned to private industry facilities. The champion should be an active stakeholder who is willing to take a share of responsibility for the work.

It is a good practice to cultivate relations with the media and opinion leaders in various sectors. Specific activities directed at the media might include periodic press releases, or ideas for interesting articles on topics such as the economic benefits of CP, international trends in environmental management and regional policy developments.

Last but not least, it is important to remember that it is not only institutions that can be influential in policy-making; there are a number of independent individuals who are also involved in policy development. These are experts in the environmental field who do not work for one specific organization. They may be freelance consultants, independent advisers, university professors or experts in other areas. They may have good contacts with the media, be well informed about international environmental programmes, and may act as advisers to powerful interest groups. Often, such individuals will have access to decision makers. All in all, they would be a great asset for the policy group. It is worth stressing that independent experts tend to be non-political figures, and most often their position and credibility will not be lost when governments change. This helps ensure the continuity of policy work at a time of the inevitable election-related slowdown.

SLIDE: Evaluation of the existing system

Identify existing barriers and incentives for CP:

- Examine the regulatory, policy and institutional framework;
- Review enforcement practices and levels of compliance;
- Analyse the resource pricing system (water, electricity, fuels).

Work group, or a contracted study?

- ❖ With this slide, show that the first task of the technical policy group is to evaluate the existing system. The objective is to identify the incentives and barriers for CP within the existing institutional setup, regulatory framework and sectoral policies. The evaluation could be performed as an a inter-institutional governmental effort, or could be assigned to a policy expert under contract.

Background

One way to begin policy development work is to conduct a policy analysis to identify existing incentives for and barriers against, the adoption of cleaner production processes by industry. This could be a collective effort on the part of the technical policy development group, or, if budget allows it, the task could be commissioned to a policy expert.

A review of the legal and policy framework and institutional set-up should reveal which provisions support CP implementation in the laws and regulations. There may be incentives and barriers in existing sectoral policies. It is also important to identify those institutions that could promote CP, as well as those whose actions or priorities tend to hamper it.

 EXAMPLE

Structure of the regulatory framework for environmental protection.

Overall, four layers of environmental regulations can be distinguished:

- Supreme legal acts, such as the Constitution, or the Framework Environmental Protection Law, which specify general rules and principles, e.g. that all citizens have the right to a clean and healthy environment, or that environmental protection is the joint responsibility of all levels of State administration. International environmental treaties can also be considered part of this first level.
- Laws and legal acts related to specific components of the environment, such as the Waste Law or the Water Law, which regulate a more narrow environmental issue, delegate responsibilities for implementation, and also provide the responsible authorities with flexibility in developing detailed regulations (e.g. directives and ordinances, or specific standards). The laws and legal acts have to be adopted by the Parliament, but the preparation of implementation procedures can be delegated to competent authorities (e.g. the Council of Ministers, individual Ministers, heads of central offices, or local administration).
- Detailed decrees and ordinances, which may include executive regulations, environmental standards and detailed technical requirements. These can be developed, updated or changed as needed by the designated authorities, without having to go through the parliamentary approval process (e.g. decrees on environmental fees, air emission standards).
- Environment-related provisions included in other legal acts or regulations (e.g. Law on Energy Use, Building Code, Labour Law, Privatization Law, etc.).

An analysis of enforcement practice should be included. Even the best environmental regulations will not automatically lead to a healthy and clean environment if enforcement is missing. It is important to determine if the command-and-control system really commands and controls. Least cost regulatory methods and market-based instruments should be explored in order to send appropriate price signals to consumers, firms and Governments (e.g. pollution charges, user charges, licence fees and environmental taxes and subsidies). A number of questions need to be posed: Do environmental inspections really pose a threat to non-complying industries? Are SMEs under regulatory oversight? Does the level of resource pricing create incentives for preventive resource use? Are there subsidies for electricity, water or fuels? Does the tax and financing system provide incentives or disincentives for CP? A good example is the use of subsidies to make local industries more competitive. Many of these policies lead to artificially low prices for resources, such as energy and water, as a result of which these resources may be overused, creating both pollution and shortages. In simple terms, a CP policy is being developed to take advantage of existing incentives and to overcome barriers. The challenge is to determine incentives and disincentives in industrial and sectoral policies, enforcement practice and the tax system.

The policy group could also help the Government to assess the existing framework for CP implementation, perhaps using the OECD Guide for Government Self-Assessment, or other methodologies successfully applied in different countries.



EXERCISE

Divide the participants into groups of four, and ask them to identify the most important factors hindering and/or promoting CP (like, for example, lack of information, strong regulation). Then ask each group to propose three ideas to promote CP (e.g. provide credit lines for CP, give preference to green products in public procurement, and introduce CP into permitting). Hand out a copy of the OECD guide for self-assessment, and ask the group to identify which part of the self-assessment guide deals with those ideas. Ask the group to answer the questions for one idea only (to save time).

Alternatively, a short analysis of the current regulatory and policy framework could be commissioned to provide a starting point for CP policy development. The work could be arranged as a consulting contract to a high-level governmental policy adviser. This approach should not only result in a useful overview, but it could also give access to decision makers. Alternatively, if financial resources are short, a CP Centre may choose to arrange an internship for a competent graduate student from a relevant department (law, government studies, business management, etc.) to carry out this work.

It is, however, important to note such a study should be more than a mere analysis of what laws apply to specific environmental issues. Important elements of the study should be the identification of the barriers and supporting factors for CP, identification of existing tools that can be modified to support CP, and an overview of the institutional panorama and main stakeholders. Above all, the study should propose concrete actions on how to proceed with CP policy development. The terms of reference should stress that the most crucial element of the work should be concrete recommendations for follow-up actions. The Costa Rican and Nicaraguan experience with this type of work will provide valuable guidance when preparing the terms of reference.

The policy group will obviously need to support the idea of contracting this work, although it should not have the final say about who will receive the contract. There is sometimes a danger that one member institution may try to exert pressure for the contract to be awarded to the candidate of its choice and while such a candidate may often be very competent, this is not always the case. In any event, the matter must be handled in a level-headed and careful manner.



EXERCISE

This exercise can help analyse the existing system. Participants are divided into groups of six; ideally, each group should include a person familiar with policy development or at least with the legal framework. An existing regulation or policy, relevant to CP, is selected and the participants are provided with a one-page summary of the programme, so that they can become familiar with the basis mechanisms. Each group will then:

1. Analyse the regulation's or policy's main goals, and how these goals are met;
2. Discuss if there are any unwanted effects, i.e., the regulation acts against the general concerns of society, such as employment, health conditions, resource and material use, etc.;
3. Analyse how CP could help to better meet the objective of the regulation under discussion, and the goals of society; and
4. Identify the opportunities and obstacles in the existing text that will help or hinder the integration of CP.

SLIDE: Build consensus and a common goal

- Stakeholders have different interests and needs;
- A consensus should be reached on the methods of work, and a compromise should be sought to resolve various issues;
- A common goal should be identified for the whole group;
- The initial focus is on goals and objectives. Concentration on mechanisms or instruments comes at a later stage.

❖ In this slide, note that policy development often involves stakeholders with conflicting goals and interests. To ensure that the process proceeds as smoothly as possible, the group should reach consensus on the method of work and establish a common goal. You may wish to suggest that it is a good practice to concentrate initially on identifying the issues that need to be addressed, rather than to try to seek solutions right away.

Background

Implementing Cleaner Production requires reducing the intensity of use of natural resources and decreasing the quantity and environmental impacts of wastes generated by the production process. Building trust is an important prerequisite. The traditional command-and-control approach tends to emphasize the conflictual aspects of the situation, but in this respect CP has proved successful in creating trust between the public and private sectors. The achievement of CP is a complex and difficult goal, demanding a compromise among conflicting interests and objectives, and the harmonization of the policies of many different sectors of government and the economy.

The policy development group will consist of stakeholders from different sectors, some with divergent objectives or expectations. This is a natural part of the process. The group will need to carry out—or at least take part in—many tasks: assess priorities and focus areas; evaluate the feasibility of alternatives; establish realistic objectives and quantitative targets; create cost-effective and financially feasible implementation plans; monitor and regulate pollution from industrial clusters or regions; and conduct periodic policy reviews and updates.

Adversarial attitudes and a lack of cooperation in developing policies do not work well over a sustained period. To ensure that the representatives of the various participating sectors cooperate

rather than compete, it is crucial to emphasize, at an early stage, the importance of building consensus and identifying a common goal.

Consensus may refer to the method of work, for instance commitment that the points of view of the various stakeholders will be taken into account, or that the private sector should be consulted when preparing the strategy and the action plan. It may also imply an understanding that each member of the group will be responsible for collecting the comments and suggestions of their “home” organizations.

Another agreed principle could be that the work will start with identifying priorities that need to be addressed, rather than focusing right from the beginning on the mechanisms to solve an issue or on the availability of financial resources. The reason is that even if, at a given moment, there are no funds or a responsible institution cannot be named, the issue should be retained on the agenda, rather than removed simply because it is not clear how, or by whom, it should be addressed.

Finally, the group may want to stress the need to build partnerships for CP promotion (e.g. business-government, local government-educational institutions, etc.). Negotiated solutions have often been shown to work better than enforced solutions, as they create a higher degree of motivation to implement cleaner production methods. The private sector would generally be represented at such negotiations by industrial organizations.

Identifying a common goal will help to ensure that the group works in the same direction, and that all actors have an interest in contributing to the work. An important key to establishing a common goal and consensus is for the Government to proclaim Cleaner Production a national priority. Several countries have already done this. The United States Pollution Prevention Act of 1990, for example, states that “The Congress hereby declares it to be the national policy of the United States that pollution should be prevented or reduced at source wherever feasible ...”.



EXERCISE

This is a role play on the resolution of conflicts between stakeholders. Divide the group in two halves: observers and players. The players should include two highly recognized policy specialists from organizations of opposing views, and the rest are policy makers and stakeholders. Invent a relevant controversial topic (e.g. a drastic increase in the price of drinking water to promote savings), and assign roles for the group of policy makers (they must approve the price hike regardless of opposition). After instructions to the players, the roles are played out with a time limit of seven to ten minutes. At the end of that time, review what happened, how and why. Ask the players how they felt in their roles, before asking the observers for their views and specifically, what they perceived as agents of change. Proceed to discuss feelings, procedures and substance.

Look for similarities between the role play and everyday situations of the audience when initiating a CP policy dialogue.

SLIDE: Identify priorities and focus areas

- Identify the most important problems to be addressed;
- Assess each issue. Is it important? Is it easy to implement?
- Dedicate resources to priority issues;
- Begin with high priority actions that are easy to implement;
- Consider how to address the concerns of small and medium enterprises.

- ❖ With this slide, show that when identifying priorities, it is good practice to evaluate each issue in terms of its importance and how difficult it is to address. In order to achieve success relatively early—important for building momentum for the adoption of CP—begin work on those high-priority issues that are easy to implement.

Background

Identifying the most important problems and focus areas will help to concentrate political, human, and financial resources on priority issues. This will ensure that the greatest impact will be made on the most important problems.

As a first step, the group should review what needs to be done, and identify the priority environmental problems. Is it the shortage of drinking water as a result of intensive pollution of water bodies by industry? Or the lack of an adequate energy production capacity to meet the peak demands of an inefficient industry? Or is it perhaps the uncontrolled disposal of hazardous waste?

One common problem is the lack of a regulatory framework, or clear and consistent laws and regulations on the environment. Another problem might be the weakness of State institutions responsible for enforcement and/or monitoring of compliance. If this is the case, institutional strengthening could be an important area on which to focus.

If the promotion of exports and the creation of employment is a priority, the aim could be to build CP into a competitiveness strategy and national industrial development policy. In any case, a thorough analysis of priorities and goals of other sectoral and development policies is required.

It is good practice to ponder which are the important issues and of those which are easy to solve. In order to create support for CP policy, build up momentum and retain a degree of motivation on the part of policy players, it is preferable to start with a small but significant problem that has a good chance of being resolved. In other words, initial actions should focus on high priority projects that are easy to implement.

It is indeed surprising that problems that are relatively easy to address and have far-reaching, demonstrable benefits (e.g. improving the supply of safe drinking water, or stimulating industry to increase energy efficiency) are sometimes ignored in favour of complex problems that require large amounts of resources and have a localized benefit (e.g. clean-up of hazardous waste sites). It might be a good idea to aim initially at resource conservation, or a decrease in energy or material intensity.

Lastly, the structure of industry will have to be taken into consideration in discussing focus areas. Do micro and small enterprises—difficult to control and regulate—make up the majority of companies? In designing actions, the question how to approach the SME sector will need to be addressed, because micro, small and medium enterprises represent some 95 per cent of industry worldwide.

SLIDE: Define clear and measurable objectives

- Choose clear objectives with quantitative targets;
- Define general objectives, accompanied by sector-specific objectives;
- Agree on indicators, e.g. energy and material intensity of production, pollution intensity, risks to human health;
- Define targets not solutions.

- ❖ With this slide, present the various considerations to be taken into account when setting objectives for the identified priority issues. Note that choosing clear and measurable objectives for CP policy is not an easy task, and it may be useful to define sector-specific objectives.

Background

Once an initial analysis of the existing situation has been carried out and the priority issues identified, objectives can be discussed. Objectives with clear, quantitative targets can help focus the efforts of all stakeholders. These objectives and targets should, however, be concrete (e.g. more explicit than simply “promoting sustainable development” or “improving the state of the environment”), because they will be used to monitor how successfully the policy is being implemented.

One approach could be to establish general nation wide objectives as well as objectives for individual sectors. When deciding on objectives, it is important to consider what indicators can be used to monitor progress. It does need to be stressed, however, that setting up meaningful and practical indicators is a major challenge. They could focus initially on energy and material intensity, pollution intensity or risks to human health. They could take the form of benchmarks or performance indicators for different sectors. Some general indicators are the change of environmental behaviour and performance of industry, the structure of industrial production (including energy and resource efficiency), the rate of modernization of production technology, or improvements in productivity.

In setting objectives, it is important to define targets without prescribing specific solutions. The objective should be the consistent attainment of targets and, over time, the progressive reduction of emissions that are linked to major indicators of environmental quality. Targets should specify a timeframe, even though they do not prescribe solutions.

Setting clear and measurable objectives is no easy task. Further details are given later on in module 3 (see the slide on monitoring implementation).

SLIDE: Formulate a strategy for implementation

- Statement of policy principles;
- Development of a national CP policy versus other approaches;
- Review of other national policies to understand how strategies have been traditionally formulated in the respective country;
- Familiarity with other countries' CP policies;
- Broad guidelines for a CP strategy.

- ❖ As part of a strategy for CP, Governments should strengthen partnerships with industry and the business community. To encourage businesses to develop new cleaner production processes and products, Governments should promote flexibility through an expanded range of policy options.

Background

Once priorities, focus areas and objectives have been settled, the next step is to agree on a statement of policy principles. While this reversed sequence may at first appear illogical, the rationale is simple: any statement of policy principles must take into account needs and priorities, which have first to be identified.

A strong and substantive statement of policy principles (and its related objectives) can provide a solid foundation upon which to build a nationwide cleaner production programme. The statement could, for example, express the intent and resolve of the Government to consider CP a top environmental priority, and to establish mechanisms to transfer responsibility for monitoring implementation to the lower levels of Government.

 EXAMPLE

Statement of policy: Pollution prevention in the United States

In the United States, there has been significant effort on the part of the federal Government and the United States EPA to promote pollution prevention. The Pollution Prevention Act was initiated by the federal Government in 1990 and encourages the source reduction of all waste types. It reaffirms that the preferred method of preventing pollution is to reduce the volume of waste generated at source and that reuse (closed-loop recycling) should be performed whenever possible. In this way, it is fundamentally different from off-site recycling, treatment, and disposal and is meant to reduce the need for these measures. Treatment and disposal are to be viewed as last-resort measures. Through the 1990 Act, the United States Government made pollution prevention a key environmental policy for the United States and charged the EPA with developing a pollution prevention strategy.

At this stage, a decision has to be made by the Steering Committee whether the technical policy group will work to elaborate a formal proposal for a national CP policy document. Other possibilities include: (a) building alliances to initiate implementation of CP in industry, or (b) integrating CP into existing and new sectoral policies, or (c) simply including elements of CP and preventive environmental management into existing environmental policy tools such as permitting, fees and fines, etc.

Should the group decide to work on a draft national CP policy, it may be helpful to review other existing national policies, to check if there is any traditional format of policy document. This is a different step than policy review; in this case the goal is to follow the traditional local ways of doing

things. Already existing policies, if consistent in their form, can be used to lend structure to the CP policy under preparation. Regarding the CP-specific contents, other countries' CP policies can provide an indication of possible directions and mechanisms. Some of the countries with advanced CP policies include Chile, Colombia, Czech Republic, Mexico, the Netherlands, Nicaragua and the United States.

The next step is to draft a strategy—a broad outline of how to achieve the identified objectives. The strategy should include guidelines (basic principles) that will determine the structure of an action plan.

Broad guidelines for a CP strategy

Based on experience in environmental policy implementation in several countries, two elements stand out. First, it is important to establish a competent and strong environmental regulatory agency that can set clear, long-term environmental goals with well defined (and agreed on) quantitative pollution reduction targets. In carrying out its work, the agency should take care not to create barriers to CP implementation. It must also have the credibility to enforce the compliance of reluctant polluters. Without such an agency, and particularly without the credible threat of sanctions, there is unlikely to be a reduction in pollution intensity of industrial production.

There are a number of useful guidelines to consider in formulating a CP promotion strategy:

- Base the approach on integrated pollution control, which emphasizes preventing pollution and continuous improvement;
- Require public disclosure of plant and company-wide pollution performance;
- Encourage greater cooperation between polluters, regulators, and the science and technology community;
- Afford greater flexibility to firms to decide how pollution intensity reduction targets should be met;
- Use market-based instruments to meet environmental objectives.

Further details are discussed in the section on the design of the action plan and programmes.

SLIDE: Select a mix of policy instruments
<ul style="list-style-type: none"> • Adapt to local culture and capacity to administer the policy; • Create demand and pressure for cleaner processes; • Modify existing instruments to promote CP; • Seek feedback from affected groups.

- ❖ This slide can help demonstrate that the mix of policy instruments should seek to create a demand and a pressure for CP practices. Two important points to make are that it is advisable first to modify existing policy instruments so that they support CP and only then to create new ones, and secondly, to consult or notify those groups affected by new instruments.

Background

The widespread adoption of CP can be achieved through a combination of mechanisms and actions, including a strong and clear regulatory framework as well as effective incentives for polluters to change their behaviour voluntarily. It bears repeating that the framework and instruments should take into account local traditions, culture and the capacity to administer policies. Naturally, incentives and instruments should not be geared to the mere support of end-of-pipe measures, but at the same time the path of action selected should not be perceived as competition between regulation and CP.

The range of policy instruments is wide, as demonstrated in module 4. Each country will need to apply the mix of policies and instruments best adapted to its circumstances. The policy group should identify and propose an appropriate mix of economic instruments and normative measures such as laws, regulations and standards, as well as information-based instruments. Incentives to stimulate Cleaner Production could include grants, loans and favourable tax regimes as well as targeted technical assistance to relevant industrial enterprises. Awareness-raising and voluntary initiatives should also be encouraged. Information and education campaigns are important policy instruments.

Before introducing new policy instruments, the policy maker should review any incentives and mechanisms that may already be in operation (this would have been done in the earlier analysis). It may be easier to modify existing instruments so that they support CP, than to create new policy instruments. Similarly, it may be a viable approach to modify existing financial programmes that support end-of-pipe projects, by requiring the implementation of CP prior to granting support for end-of-pipe measures. Other possible ideas are presented below.

EXAMPLE

How to modify regulatory instruments to promote Cleaner Production:

A number of regulatory instruments currently in use can be modified to encourage pollution prevention and CP, rather than simply aiming to mandate pollution control. Some options that have been used around the world include:

- (a) Mandatory review of applicability of Cleaner Production within the permitting process;
- (b) Regulation of emissions by mass instead of concentration, to encourage reduction rather than dilution;
- (c) Environmental impact reports;
- (d) Permits for all hazardous emissions;
- (e) Public disclosure of standard emissions, inputs and efficiency of their use, as well as any spills, releases, or accidents;
- (f) The training of environmental inspectors to identify and recommend pollution prevention opportunities;
- (g) Enabling companies to spend money from penalties and fines on cleaner production initiatives;
- (h) Pollution regulation through economic instruments instead of command-and-control;
- (i) Introduction of an integrated permitting approach (see IPPC).

In designing the mix of policy instruments, particular attention should be paid to those instruments that can help create a demand for cleaner, more eco-efficient products and processes. Depending on the circumstances, this could include: strengthened public access to information; disseminating information on environmental management successes; and public procurement policies that give preference to “green” products. Likewise, permits requiring environmental management programmes provide strong incentives for continuous environmental improvement within enterprises, while

penalties for poor environmental performance may be expanded to include public exposure and social stigma, in addition to a financial impact.

The CP strategy and policy instruments will most likely be adopted after consultation with business and industry. As a result, the final mix of policy instruments will be a compromise resulting from the political process. Policy makers should ensure the agreement, or at the very least understanding, of those whom they seek to regulate, whether in the private or the public sector. Thus, in designing the instrument mix, the idea is to provide a starting point for discussion rather than a complete solution.

SLIDE: Design an action plan and programmes

- Establish a mid-term time frame for the action plan;
- Build on previous work to take advantage of experience;
- Set up sector-specific subprogrammes;
- Consult with affected groups;
- Allow time for adaptation;
- Evaluate and modify periodically.

- ❖ With this slide, present general guidelines for designing the action plan and programmes. The key points to make are that the realistic time frame for an action plan is about five years (with a mid-life review), and that it may be necessary to formulate sector-specific programmes. Consultation with stakeholders is essential.

Background

An action plan in its most general form will include:

- Quantitative targets and timelines for their achievement;
- Specified actions to be taken; this could perhaps include separate programmes for individual sectors, or alternative scenarios;
- Guidelines for awareness-raising, access to information and technical assistance;
- The financial and economic implications of specific actions;
- Clarification of the roles and responsibilities of the actors involved;
- A monitoring and evaluation mechanism.

An action plan should have a time horizon of at least five to six years (this may depend on the scheduled elections) and be conceived as a “work in progress” which may be adjusted as implementation proceeds. In any event, after some two years, or halfway through implementation, it is advisable to take stock of the situation by determining successes and failures in implementation.

The action plan should try to build on any work already undertaken on CP and environmental management. Experience from past successes and failures is helpful, because it can prevent a waste of time and resources. In all likelihood there are existing institutions that may support, or oppose, CP, unless efforts are made to include their views in the action plan.

Planning is the stage when consultation with stakeholders is crucial. Goals and schedules should be both realistic and implementable; before the action plan and programme are finally accepted for implementation, stakeholders should give their views on their feasibility. It may be necessary to negotiate realistic targets with industries and plants and then insist that these targets be met.

At this stage, it might be useful to focus on specific sectors, e.g. improving the environmental performance of particularly polluting enterprises/sectors, once more stressing the financial benefits to be gained from Cleaner Production. Efforts at this level can bring results quickly, even when the policy framework is weak. It is advisable to design actions and mechanisms that will bring stakeholders together and encourage voluntary participation in various actions. This may result in enhanced general support for CP implementation across different sectors.

It is necessary to recognize the need for reasonable transition arrangements and to allow adequate time for compliance. Instruments should emphasize opportunities rather than obligations and it is useful to provide advice as well as enforce permits. At the same time, efforts should be made to strengthen environmental agencies so they can develop their technical and monitoring capabilities.

Finally, the design of the action plan and programmes should take into account environmental effectiveness, economic efficiency, ease of administration and the political acceptability of the proposed measures (for further details, see the section on the evaluation of policy effectiveness later in this module).

SLIDE: Organize human and financial resources

- Beware of using lack of money as an “idea killer”;
- Put incentives in place;
- Modify existing financial schemes to support CP;
- Check foreign assistance programmes;
- Assign existing personnel or use volunteers.

- ❖ A lack of resources can stifle any initiative, but lack of resources is also frequently used, or abused, as a justification for inaction. With this slide, stress the possibility of using existing financial mechanisms—modified if needed—to support CP. Implementation should be demand and efficiency driven, so that some of the costs are covered by beneficiaries.

Background

“We can’t afford it”, or “we have no people to do it with” are two of the most frequently used “idea killers”. Experience shows, however, that shortage of money or manpower is not the reason why a company does not implement cheap, low hanging fruit, CP options that cost next to nothing and would actually bring savings. Even though a lack of money and human resources may indeed be an obstacle to carrying out specific activities, it should not be used as an excuse for inaction.

CP policy implementation does not have to be expensive and this can easily be confirmed by a cost-benefit analysis. When considering how to finance CP implementation, financial incentives are a useful starting point. CP implementation should be a demand- and economic efficiency-driven process. It is vital to get the external incentives for enterprises right and also to ensure that other policies do not create disincentives; mainstreaming CP is also important in the context of financing. Decisions on taxes, pollution charges and financing schemes may be more significant than environmental regulations. Ministries of finance should think of taxes as a way of changing behaviour and not just generating revenues.

It is useful to take advantage of existing incentive schemes and to modify financing mechanisms in environmental policies so that they support CP implementation. The analysis of those instruments will have been done at an earlier stage. Re-directing resources from environmental fees and fines may be that much easier at the local level, where municipalities have more freedom to decide on the spending of revenues.

It may be necessary to develop a scheme for technical CP assistance to industry. Some of the work should be done under a consulting contract with environmental service providers, but a part of the task— capacity-building and train the trainer programmes, for example—could be carried out by a CP centre. Financing could, for instance, be based on revenues collected from environmental fees.

As far as human resources are concerned, much expertise and staff time will be needed on the policy development level. For some tasks related to implementation, however, it may be possible to reallocate the time of existing personnel or use volunteers or interns if hiring new staff is not an option. Additionally, international development institutions are a potential source of resources, shared expertise, or participation in training programmes.

SLIDE: Implementing the strategy and action plan

- Activities to be “owned” by local actors and organizations;
- Involvement of a sufficient number of individuals in appropriate positions;
- Long-term cost-effectiveness to be assured;
- Clear and measurable indicators of progress to monitor policy impacts;
- Periodic evaluation and adjustment;
- Continued government support to be secured.

- ❖ When showing this slide, note that the implementation of strategy and action plan is the longest-lasting stage in the policy development cycle. Stress that it is not a static process and will require periodic evaluation and adjustment of the initial objectives and mechanisms.

Background

Implementation of the strategy to achieve the agreed policy objectives is the longest step in the policy process. It is vital to build regular progress monitoring and the evaluation of effectiveness into the implementation cycle. Based on lessons learned, objectives and mechanisms will have to be adjusted to assure that the achievements are sustainable. The following conditions will improve the prospects for sustained results:

- (a) Activities must be “owned” by local actors and organizations. A high level of participation from stakeholders should be sought for sustained effect. Those interest groups most affected by the policy should participate in the design, implementation and evaluation of the various mechanisms. Ownership of the process by the stakeholders is crucial to its success.
- (b) Interventions and support must involve a sufficient number of individuals in appropriate positions—decision makers and opinion leaders—with the requisite knowledge and interest to carry the process forward. The importance of coordination increases with the number of actors involved, and care must be taken to try to seek a compromise when interests conflict.

- (c) Long-term cost-effectiveness is essential if Cleaner Production is to become a normal and integrated practice in industry. A cost-benefit analysis needs to justify the proposed policy and action plan. The strategy and instruments should aim to create demand for CP, so that the adoption of CP is economically driven. It is unsustainable to rely on long-term external funding. External experts could be used as a catalyst, but local capacity for CP should take over as early as possible.
- (d) Clear and measurable indicators of progress should be available to monitor policy impacts. Monitoring should be an integral part of target setting and activities designed to promote effective environmental management in enterprises. Data demonstrating the economic/financial benefits of environmental management are particularly helpful as are “early warning” systems to detect any distortions and undesired impacts of the policy instruments. Resources should be dedicated to ensure monitoring.
- (e) Periodic evaluation and adjustment of objectives and policy instruments will be necessary. It is unrealistic to assume that everything will fall in place the first time when planning policy and action plans. Depending on changing priorities, lessons learned and the inputs of stakeholders, the specific approach may have to be modified. Environmental effectiveness, simplicity and ease of administration, political acceptability and the cost-effectiveness of measures are some of the parameters to be taken into account when evaluating policy instruments.
- (f) Government support should be secured where mechanisms are required to encourage structural changes of the roles and functions of governmental agencies, regulatory systems, resource pricing, taxation, etc. One important aspect to consider is how to ensure that policy development and implementation is insulated from the effects of the political process, such as elections and changes in government.

One important element of policy implementation is to provide training, information and education campaigns. Because of its crucial impact, it is discussed below in a separate slide.

SLIDE: Carry out information and education campaigns

- Awareness-raising and information campaigns are essential for a wider adoption of CP;
- Policy and objectives must be easy to explain;
- It is important to demonstrate that CP is beneficial and applicable to the individual;
- The information and education programmes have to be adapted to the needs of different target groups.

- ❖ This slide can help demonstrate that information and education may be the key to a wider adoption of CP. Earlier in the policy cycle, broad support for the concept resulting from information campaigns will also help in designing an effective policy.

Background

One of the most puzzling questions concerning Cleaner Production is: “Why, if it is indeed a technically feasible and economically proven concept and a win-win strategy, is Cleaner Production not adopted more widely?” There is no short or easy answer to this question, but experience shows that information and education campaigns are essential to the successful adoption of CP in industry. Information campaigns should aim to increase knowledge and change the attitudes of policy makers, managers, regulatory personnel, technologists, academics and NGOs.

The concept of Cleaner Production implies that environmental considerations are integrated into planning and development activities. This means that the implementation of the CP strategy and successful use of policy instruments will much depend on the skills and commitment of officials in the public sector. Promotion activities on the benefits of CP, and the effort to mainstream it into other policies, should also be targeted at industrial associations, business networks and NGOs. Work is also needed to disseminate success stories, to sensitize public officials and overcome the barriers within and outside enterprises to the adoption of better environmental management practices.

To create broad-based support and stimulate public interest, the strategy and action plan must be easily explained in simple and understandable terms. It was stressed earlier that clear indicators and measurable objectives are needed, but this time the emphasis is on being able to communicate the programme to the general public.

Public pressure invariably plays a significant role in building the necessary political will to enact and enforce pollution regulation. The main theme in convincing an individual of the need for Cleaner Production might be: “It is good for the environment, it is good for national competitiveness and economic activity and it helps conserve resources. Nonetheless, it needs your support of preventive environmental management.”

Information and education campaigns will be different depending on the targeted sector. For civil servants, the focus may be on policy instruments and macroeconomic impacts, while for industry concentration will be on more technical CP issues. Mechanisms that could be used for general awareness-raising include the media, web sites, brochures or posters. More technical information might be delivered through information clearing houses, hotlines or workshops.

Capacity should be developed in all the groups involved in the transformation towards Cleaner Production; policy makers, government officials, technicians, managers and financiers would, for example, all need to understand the incentives for CP to happen. In general terms, the information and education campaigns should cover:

- (a) Reasons for the implementation of the CP action plan and strategy;
- (b) Human resource development for the promotion and development of CP;
- (c) Information and awareness-raising campaigns for all Cleaner Production stakeholders;
- (d) Compilation and dissemination of up-to-date information on CP practices and technologies.

An information strategy can be applied to all types of support programmes, be they regulatory, financial, managerial or technical in nature. Organizing awareness-raising or information seminars and facilitating networks of individuals in certain sectors of industry may also lead to more effective information dissemination and a higher level of commitment. This sectoral approach based on the train the trainer scheme has often proved to be effective.

SLIDE: Monitoring of implementation

- Built-in feedback mechanisms;
- Need for well-designed indicators for monitoring;
- Incentives for participants to report progress;
- Ability to measure/monitor implementation.

- ❖ Monitoring implementation requires a well functioning policy development group and a built-in feedback mechanism. Specific indicators have to be adequate to meet the needs and objectives of monitoring, but above all it is crucial to ensure that participants have an incentive to report progress and that implementation can indeed be measured and/or monitored.

Background

The effects and sustainability of a policy are difficult to measure. Efforts are often made by various sectors—education, legislature, for example—results may be slow in the case of Cleaner Production. This is particularly true for activities that are not at the level of industry.

In order to be able to measure sustainability, policy in general and its operational components in particular, should include good indicators as well as built-in mechanisms to monitor and evaluate lessons drawn from implementation. This, in turn, requires feedback mechanisms that will help policy makers to collect and analyse information received.

Indicators focusing on relevant aspects of the programmes (financial savings, efficiency of resource use, reduction of pollution etc.) at the relevant levels (from the macroeconomic level, to specific industrial sector level, to selected individual facilities) should form the standard elements of a strategy for the adoption of Cleaner Production. Data demonstrating the economic/financial benefits of CP implementation are particularly helpful, but it is important to try to measure environmental impacts as well.

As a general rule, indicators that measure implementation should be developed together with policy objectives and the action plan. They could include some of the following:

- (a) Increase in demand for CP services, e.g., number of CP assessments, number of technical CP service providers;
- (b) Evaluation of economic and environmental results of CP in selected (target) sectors;
- (c) Commitment to CP by government, enterprises and other stakeholders;
- (d) Institutional arrangements to facilitate and support the implementation of CP, including the participation of relevant ministries;
- (e) Success in dissemination of CP information and awareness-raising;
- (f) Mechanism to review and adjust policy framework and examine adjustments made as well as the instruments put in place;
- (g) Information, training and education activities implemented;

- (h) Certifications following an independent voluntary programme (e.g. CP Certificate, eco-labels, ISO 14001); number of participating enterprises;
- (i) Existence of a financing framework for CP: financial mechanisms in place and number of projects financed; CP investment projects following implementation of CP programmes;
- (j) Transparency of CP policy development: number of stakeholders participating, existence of a consultative mechanism;
- (k) Time necessary to respond to new issues and modify objectives and instruments.

It is also imperative that stakeholders should have an incentive to report progress and that the Government concerned have the ability to actually measure implementation. Both characteristics are essential for the schedule and target readjustment mechanism, and monitoring should be an integral part of target setting and revision.

SLIDE: Evaluation of policy effectiveness

In evaluating policy effectiveness, the following aspects need to be considered:

- Environmental effectiveness;
- Economic efficiency;
- Ease of administration;
- Political acceptability.

- ❖ With this slide, show that an evaluation of the effectiveness of policy a needs to focus on four aspects. You may wish to stress that these four aspects should also be considered when designing the action plan and in the choice of policy instruments.

Background

Many environmental policy instruments have been put in place in recent years, but there is growing concern about the degree of success in their implementation and their effectiveness. Most policy instruments seek to change the behaviour of target groups, leading to an improvement in the state of the environment, or in this specific case, to the widespread adoption of preventive environmental practices.

The implementation of CP is not simply the domain of government and industry. CP Centres, business and trade associations, environmental service providers and the education sector are all involved. In practice, a mixture of policy tools is commonly used: environmental legislation directing command-and-control measures, economic instruments, cleaner production processes and voluntary action by the public and business community.

In evaluating the effectiveness of CP policy and the related action plan, several questions need to be posed:

Environmental effectiveness

- To what extent has the implementation of the policy instruments achieved the proposed objectives of CP?

- Can changes be measured in environmental quality, the reduction in the health risk and resource efficiency resulting from the policy?
- When did environmental improvements occur? Quickly, within a year, or later in the process?
- Have environmental priorities changed since the time the action plan was prepared? Do they need to be updated?

Economic efficiency

- Do the proposed instruments operate with minimum economic cost to society?
- Do they encourage innovative approaches in implementation? Did problems arise through loopholes, imprecise formulation of guidelines, etc.?
- Are price signals strong enough for target groups to respond?
- What were the domestic impacts of the policy, e.g. on prices, employment, profitability and competitiveness, growth?
- Did production efficiency increase? Did implementation stimulate foreign exports and increase international competitiveness?

Ease of administration

- Were the policy and instruments easy to implement?
- Did the work achieve integration of CP in policies related to other sectors?
- What was the opinion of industry and enforcement agencies concerning simplicity and flexibility of operation?
- What was the effectiveness of instruments in ensuring compliance?
- Were costs associated with monitoring, licensing and enforcement low or exceedingly expensive?

Political acceptability

- Did the policy and the instruments gain political acceptance? Were they supported by the key players?
- Did stakeholders actively participate in the development and modification of the policy?
- What mechanisms were used to ensure input of the various stakeholders?
- Was the development of policy and design of instruments a transparent process?
- Do the instruments conform to international agreements?

The above considerations should also be taken into account when designing the action plan and choosing policy instruments.

SLIDE: Periodic policy adjustment

- Build in a mechanism for periodic policy adjustment;
- Examine whether policy instruments are working;
- Redefine goals and/or schedule as needed;
- Take into account the contributions and views of various actors;
- Communicate changes to the stakeholders.

- ❖ The key message to convey with this slide is that there must be a flexible mechanism to adjust the strategy and action plan based on its monitoring and evaluation. Should changes take place, it is essential to communicate these changes to the stakeholders.

Background

If policy implementation is monitored and evaluated on a regular basis, successes and failures should be detected fairly quickly. This not only entails identifying the mechanisms and instruments that work, but also determining whether the original objectives and assumptions were realistic. Mechanisms should, therefore, be built into the policy and the action plan in such a way as to allow modification and adjustment as needed.

The strategy will succeed only if progress in meeting the goals is regularly monitored, and the strategy revised where necessary. It is vital to examine whether objectives are being met and if corresponding timelines are realistic; where this is not the case, they should be redefined. It is preferable to adjust goals or timelines and allow the policy process to continue, rather than to let things slip, thereby creating an impression that the process no longer functions. Should there be a need for adjustment, the contributions and viewpoints of various actors should be taken into account.

Finally, it is important to communicate any adjustment and changes to the stakeholders. They also require clarification as to why changes were made and how they are likely to be affected. It is especially crucial to notify implementing agencies about changes in policy instruments.

SLIDE: Common barriers to CP policy development

- Low environmental awareness and regulatory pressure;
- Lack of public pressure on industry and government;
- Tenuous relationship between the main stakeholders;
- Low level of CP awareness among decision makers;
- Environmental regulations that do not promote CP and preventive measures.

SLIDE: Common barriers to CP policy development/2

- Little integration of CP with other relevant policies;
- “Not-in-my-term-of-office” syndrome;
- Limited in-country capacity and resources for CP policy development;
- Technical focus of most Cleaner Production Centres;
- Difficulty in defining what CP is and what it is not, and in measuring the results of CP.

- ❖ With these two sides, show the factors likely to hamper policy development. They are not the same as the barriers to CP implementation in companies. You may want to compare these barriers with the conditions necessary for CP policy development, discussed at the beginning of module 3.

Background

Cleaner Production often fails to be implemented as a result of human factors rather than technical problems. The traditional end-of-pipe approach is well known and accepted by industry and the engineering sector. Existing government policies and regulations often favour end-of-pipe solutions, which are easier to administer. However, the barriers to CP policy development are somewhat different than the obstacles faced when trying to implement CP in industry.

1. Low environmental awareness and regulatory pressure

Governments tend to focus on economic and social issues, and in practical terms their commitment to environmental matters may be limited. Moreover, the regulatory framework is often insufficient and enforcement weak. This can lead to a culture of non-compliance in industry, especially if much of industry is state-owned;

2. Lack of public pressure on industry and government

Even though there is a recent increase in environmental awareness, there are few practical mechanisms that enable the public to put pressure on industrial enterprises to improve their environmental performance. Consumer demand for “greener” goods is also limited. Lastly, there is often a lack of political will in the Government or the parliament to get involved in the process, or even negative lobbying on the part of industrial interest groups;

3. The relationship between the main stakeholders

The Government, the business sector and civil society may still be at an early stage, often characterized by a lack of dialogue or consultation when preparing policies, and confrontational approaches when faced with a controversial issue. Similarly, there may be a lack of coordination between government departments. There are generally several government agencies with a direct stake in CP implementation, but their activities may not be internally coordinated and it is not uncommon for various ministries to pursue their own projects separately. Those developing CP policy may have to contend with inter-institutional tensions and the adversarial attitudes of different players;

4. Low level of CP awareness among decision makers

Save for a few countries, limited work has been undertaken to raise awareness of CP among policy makers, while industry regards pollution as a necessary evil and believes that pollution prevention always entails costs. In practice, CP is still not the preferred environmental management approach, and the pollution control mindset predominates in environmental planning and decision-making. A great many decision makers were taught that the end-of-pipe approach is the best and technically safest solution, and consequently, consider preventive approaches to be high-risk concepts.

5. Environmental regulations do not promote CP and preventive measures

Regulations and policies are often limited or inconsistent, or when they exist, they are largely based on the command-and-control approach, which tends to promote end-of-pipe solutions. Enforcement tends to be limited, except when there are public complaints.

6. Limited integration of CP with other relevant policies

Cleaner Production is almost always seen as a technical solution to environmental problems. Integration of the competitive aspect of CP in relevant industrial, trade promotion and fiscal policies (mainstreaming) is rare. In the past, most CP projects were organized as stand-alone activities, and little success was achieved in including CP in other relevant business services such as business development training, skill development training, technology management, quality management and sector-specific assistance.

7. “Not-in-my-term-of-office” syndrome—and focus on short-term goals

Many politicians and government officials tend to plan their activities for a time-span not exceeding four to five years, which generally represents their term of office. During an election year or changes in government, any work on policy development normally slows down.

8. Limited in-country capacity and resources for CP policy development

This includes the lack of technical CP knowledge among political decision makers and persons with experience in policy development and conversely, the lack of policy development experience of CP professionals. Financial resources may also be in short supply for organizing policy development.

9. Technical focus of most Cleaner Production Centres


Historically, the main priority of CP Centres has been to implement CP demonstration projects in enterprises to create a credible project portfolio, to build the technical capacity of CP consultants and to carry out dissemination and promotion activities. As a result, most of the work has focused on industry and on CP consultants. Many CP Centres have had little to offer individuals and organizations involved in policy-making and their credibility as policy players has not yet been firmly established.

10. Difficulty in measuring results of CP and cost-benefit analysis, combined with problems in defining what is, and what is not, CP

Savings achieved through the implementation of CP are difficult to quantify. On the microeconomic level, most enterprises do not have a material tracking or accounting system that would allow the control and valuation of inputs and outputs. This can also lead to problems in demonstrating positive returns on investments made in CP. On the macroeconomic level, changes in the economic development rate will influence the rate of pollution generation, which is

difficult to attribute to CP policy measures. Finally, some effects are difficult to ascribe to CP (for example, changing input materials to a cheaper and less polluting alternative can be classified as a CP or economic measure). It is not easy to carry out a realistic cost-benefit analysis for CP on a national scale, and as a result the benefits from CP implementation are not well understood.

MODULE 4

 2 hours

POLICY TOOLS AND INSTRUMENTS:

- Regulatory instruments (command and control)
- Economic (market-based) instruments
- Information-based strategies

OBJECTIVES OF MODULE 4:

Module 4 presents various environmental policy instruments that can be used in promoting CP. Regulatory (command and control), economic (market-based), and information and soft approach instruments are discussed in detail, and concrete examples cited from Latin America and other regions.

SLIDE: What is a policy instrument?

A policy instrument is a tool or a mechanism used as a means to accomplish a specific goal.

A strategy is a plan for attacking a problem, and policy instruments are a means to carry out that attack.

- ❖ Note that policy instruments are implementation tools to reach the identified policy objectives. Some policy analysts distinguish 200 environmental policy tools.

Background

A policy instrument is a tool or mechanism used as a means to achieve specified objectives. It is important to select the right policy instruments when preparing an action plan and programmes. The “right” instruments mean those appropriate to the conditions of the country, level of institutional development and the policy objectives.

**EXERCISE**

This is a short exercise to introduce the concept of a policy instrument. As a first step, ask participants what they understand a policy instrument to be, and then request them to list the environmental policy instruments used in their respective countries. Make a special effort to identify any economic and information-based instruments. You may also want to reinforce the message contained in module 2 that policy is not synonymous with legislation.

SLIDE: Range of policy instruments

Graph showing the instruments
(available only in the PowerPoint slide presentation)

- ❖ Show that a variety of policy instruments are available to environmental policy-making, and help the participants visualize the three categories of instruments (regulatory, economic and information). You may want to note that although other categorizations exist, this is the one most commonly used and will serve as the basis for further analysis.
- ❖ Please note that while the list of policy instruments presented in the module is by no means complete, it contains the most common. The objective is to present a selection rather than analyse in depth all possible instruments.

Background

Some policy analysts believe that there exist almost 200 specific policy instruments that are applied in environmental protection, and Governments may use many of them to encourage the adoption of Cleaner Production. There are various ways to group those instruments. In addition to the three categories distinguished by the nature of their impact (regulatory, economic and information), it may be worth noting two further common divisions.

Sometimes the policy instruments specify the exact goal to be achieved (descriptive) or prescribe the way in which to do so (prescriptive). The table below illustrates this relationship.

	Policy <u>specifies</u> the goal to be achieved	Policy <u>does not specify</u> the goal to be achieved
Policy <u>specifies how</u> the goal is to be achieved	<ul style="list-style-type: none"> • Some command-and-control instruments 	<ul style="list-style-type: none"> • Technology-based standards
Policy <u>does not specify how</u> the goal is to be achieved	<ul style="list-style-type: none"> • Most standard setting • Most negotiated agreements • Emission trading schemes • Some command-and-control instruments 	<ul style="list-style-type: none"> • Environmental taxes and fees • Other market-based instruments • Public information

Policy instruments also differ according to the nature of the interaction between government and industry and the level of obligation of the policy instrument. A distinction may be made between:

- Specified compliance, where the Government imposes obligatory standards on the regulated party;
- Negotiated compliance, where the regulators and the regulated interact in setting the obligatory standards;
- Co-regulation, where there is a high level of interaction between the parties, but the agreed standards are not mandatory;
- Self-regulation, where industry acts unilaterally in setting standards that are not legally enforceable.

The above categorizations are not mutually exclusive, nor is the division between the different categories always very distinct. However instruments are grouped, it is important to select the right mix of instruments that is most appropriate to the circumstances within each country.



EXERCISE

Divide participants into groups of four to six, and provide them with three case studies or examples of environmental policy instruments. Ask participants to determine the type of instrument and discuss its advantages and disadvantages. Then, encourage them to discuss its suitability to their local conditions as well as any modifications needed.

SLIDE: Policy instruments

There exist two or three dozen commonly used policy instruments, which fall into three general categories:

- Regulatory instruments, which require or mandate specific behaviour, e.g. determine what is prohibited, what is allowed and how to carry out certain activities;

SLIDE: Policy instruments/2

- Economic instruments, which create incentives or disincentives for specific behaviours, by changing related economic conditions;
- Information-based strategies, which seek to change behaviour by providing information. The underlying assumption is that the actors do not take optimal or correct decisions for lack of information or know-how.

- ❖ Present the three categories of instruments in general terms. The objective is to show that not only direct regulation can be used in environmental policy—which tends to be an intuitive reaction on the part of participants—but also that other instruments can be successfully applied. Specific examples from Latin America and other regions will be presented to illustrate the point.
- ❖ Note that the different policy instruments are not used in isolation. Regulatory instruments typically operate in conjunction with a threatened economic penalty; economic instruments need an appropriate legal framework; and the provision of information is a necessary element in the implementation of most types of policy instruments.

Background

Since the inception of environmental policy, the predominant strategy for pollution control has generally been through the use of regulatory instruments, where a public authority sets standards and then inspects, monitors and enforces compliance to these standards, punishing transgressions with formal legal sanctions. These regulations may, for example, specify an environmental goal—such as the reduction of carbon dioxide emissions by a specified date—or they may mandate the use of a particular technology or process.

Such an approach gives the regulator maximum authority to control where and how resources will be allocated in order to achieve environmental objectives, and it provides the regulator with a reasonable degree of predictability as to the extent pollution levels will be reduced. There are certain situations where regulatory instruments may be seen as the most appropriate and effective means of achieving a desired environmental outcome, an example being the control of hazardous materials through specified restrictions or banning.

The second method that can be used to promote pollution prevention or a cleaner production policy is the market-based approach, using so-called “economic instruments”. In this case, preventing pollution and Cleaner Production is promoted through economic incentives or financial penalties rather than simply through action enforced by the Government. Marketable permits, green procurement guidelines promoting “cleaner” products, or customs and tax breaks for pro-environmental investments are examples of a market-based approach. In some cases, a market-based approach is initiated by the Government, but then left in the hands of economic markets. Market-based instruments show some theoretical advantages compared to command-and-control regulations in achieving environmental goals and economic efficiency simultaneously.

Taxes, fees and charges may be used to promote Cleaner Production practices by raising the costs of unwanted outputs, or by providing incentives to promote the more efficient use of natural resources. In some instances, it may be appropriate for the revenues from these instruments to be used to support CP activities, further stimulating preventive approaches. One significant constraint against the more widespread adoption of market-based instruments is that it is often not politically feasible to set taxes at a sufficiently high level to achieve the desired environmental goals.

In addition to creating an appropriate regulatory and financial framework for CP, the Government may further stimulate the adoption of Cleaner Production practices through the use of information-based

measures. These may be employed to provide the right incentive—for example, through the public disclosure of a firm’s environmental performance—as well as to build awareness and capacity within industry, such as through technical assistance and the publication and dissemination of relevant case studies.

SLIDE: Regulatory instruments

- Environmental norms and regulations/“command and control” (Brazil, Chile, Colombia and Mexico);
- Product bans and trade restrictions (cadmium, pesticides, CFCs);
- Raw materials depletion quota (forestry law in Costa Rica, prohibiting exports of unprocessed timber).

- ❖ The objective is to present some typical regulatory instruments that have been in use for the longest time.
- ❖ Note that while they tend not to be very efficient in achieving environmental improvements, these instruments create the backbone of most of the world’s environmental protection frameworks. With some subtle changes in the way they are constructed or applied, they can be successfully used for promoting preventive measures.

Background

Mandatory regulation has historically been at the centre of governmental instruments to reduce environmental risk. There has, however, been wide criticism of its ineffectiveness and inflexibility. Traditional command-and-control legislation is increasingly viewed as an inefficient way of achieving environmental quality improvements. In particular, companies are not being given a continuous stimulus to improve their performance. For instance, some regulatory approaches are based on prescribing technical solutions (best available technology) as a measure of performance, rather than on making industry accountable for achieving pre-established targets. When these approaches are used, regulations are often designed and implemented in a piecemeal manner, rather than providing industry with a comprehensive set of targets and appropriate phase-in periods to meet them.

Regulatory instruments have several advantages. They clearly outline the Government’s expectations from the polluting sources. They seem equitable, as they treat comparable sources of pollution in a uniform manner. The level of detail also allows a distinction to be drawn between pollutant sources depending on age, location, industrial sector or level of toxicity. Finally, they represent a familiar tool for regulatory agencies. They can, however, also lead to a rigid insistence on meeting environmental goals in a particular manner, are often media specific, fail to take into account the big picture and tend to stifle innovative approaches.

Regulations can be difficult to enforce, costly to administer and offer no incentive for those exploiting the environment to attain standards higher than those imposed by the law. They are also inflexible. Those subject to regulations may have no choice in how they reach the environmental and social goals, and industry must often incur substantial capital costs in order to comply with detailed rules. An additional problem is posed by logistics. Pollution, for instance, is caused by a large number of individuals making it difficult to enforce standards. Finally, consumers have little financial incentive to purchase environmentally friendly goods.

EXAMPLE

In Latin America, the principle of environmental protection has been included in constitutional law by all nations, although to varying degrees. Most countries have established a general environmental legal framework together with regulations dealing with specific areas such as water resources, mineral resources, marine and land areas, hunting and fishing, forestry resources, tourism, chemical products, pesticides and air pollution. Many countries have also developed national environmental plans and strategies.

There is a large body of rules and regulations on specific environmental issues, such as Environmental Impact Assessments (EIAs), hazardous wastes, environmental crime, protection of natural resources and biodiversity, regulations for the production of, use of, and access to natural resources, and the protection of human health from harmful effects on the environment.

Laws intended to regulate the use of natural resources often include provisions to punish non-compliance. However, the rules and regulations do not usually include realistic criminal or administrative sanctions. Rules and regulations are hard to enforce because many institutions cannot monitor compliance and systematic enforcement can have negative economic effects. One recent significant development has been the introduction of mandatory EIAs in many countries. However, most of the EIAs conducted so far have mainly focused on reducing negative environmental impacts and have seldom altered a proposal significantly, let alone led to its rejection.

Environmental norms and regulations

Historically, the most widespread approach to environmental pollution has been the setting of standards, i.e. the command-and-control approach. This approach relies on standards of various types to bring about improvements in environmental quality. In general, a standard is simply a mandated level of performance that is enforced in law. An emission standard is a maximum rate of emissions that is legally allowed. The idea behind a standard is, if you want people not to do something, simply pass a law that makes it illegal, then send out the authorities to enforce the law. A leading problem with standard setting is the question of cost-effectiveness and enforcing compliance.

In direct regulations, the policy maker may specify a desired outcome or condition, such as a maximum level of emissions from a pollution source (*emissions standard*), or a maximum ambient concentration of a particular pollutant (*ambient standard*). Example of the former include regulations on the maximum allowed value of Biochemical Oxygen Demand (BOD5) and total suspended solids in waste water discharged to water bodies; examples of the latter include the allowable concentration of air pollutants in a residential area, or noise levels at the workplace.

Alternatively, a policy maker can prescribe a specific technical means to achieve the required outcome (*technology-based standard*). This type of direct regulation uses detailed technological standards to obligate a polluter to use a specific type of machinery, pollution control equipment, or process specifications. Best Available Technology is an example where a technology-based standard would be used. Another policy tool is a *performance-based standard*, which focuses on the quality of a facility's operation by requiring certain equipment maintenance or housekeeping procedures.

All countries in Latin America have some form of environmental norms and regulations, some of the most developed of which, in terms of promoting Cleaner Production, can be found in Brazil, Chile, Colombia and Mexico.

Product bans and trade restrictions

Direct regulation may also prohibit, limit, or phase out the use or release of a chemical compound. The imposition of a ban—or defined phase-out schedule—for a particular product or substance is an authoritarian means of promoting Cleaner Production. This may be implemented through application of the product-choice (or substitution) principle.

Some examples include the prohibition of the use of certain pesticides (e.g. DDT), the ban on the use of products containing cadmium, or the elimination of ozone-depleting substances such as chlorofluorocarbons.

Raw materials depletion quota

The sustainable management of natural resources can be promoted by limiting and regulating extraction activities, or requiring compensating measures. This approach was used for the first time in the case of lost fish catches resulting from overfishing. On a national level, it is commonly used in connection with forestry, e.g. requiring reforestation efforts in the wake of commercial woodcutting. A good example is a ban on the export of unprocessed wood introduced in Costa Rica, whereby the export of timber in the form of logs or unprocessed planks is prohibited. In addition, specific forms of reforestation are required.

SLIDE: Regulatory instruments/2

- Liability assignment (Brazilian law on non-compliance, hazardous waste management in the United States);
- Extended producer's responsibility and product take-back schemes (cars in Germany, household appliances in Japan);
- Facility operation standards/permits (EIA, IPPC Directive).

Liability assignment

Liability payments are made to compensate for the damage caused by a polluting activity. Such payments can be made to the victims of chronic or accidental pollution or to the government. Environmental liabilities with a potentially strong financial impact that a company may face include:

- (a) Environmental fees/taxes for the “use of the environment” charged by the state or local administration;
- (b) Environmental fines assessed in case of non-compliance, or even closure or suspension of activities on environmental grounds;
- (c) Cost of implementing environmental measures required by authorities for a company to continue operations;
- (d) Cost of implementing environmental clean-up programmes, both on-site and off-site;
- (e) Compensation paid to third parties that suffered as a result of environmental damage;
- (f) Compensation paid to employees whose health was damaged (e.g. exposure to lead or asbestos);
- (g) Potential costs of dealing with the consequences of changing environmental regulations (e.g. waste substances that may be declared hazardous in the future).

Several countries have found that enforcing strict liability, where firms are held responsible for all and any environmental damage they cause (even if they have fulfilled their legal obligations and have exercised due environmental diligence) often leads companies to try to minimize their risks and take preventive measures. The success of liability systems depends on the nature of the enforcement and legal system of the country.

Liability rules are a threat to environmental non-performers, and can exert a powerful economic pressure to move away from polluting technologies and unsafe products towards Cleaner Production. For example, the management of some categories of hazardous wastes in the United States is subject to such strict liability rules that the generator may be held responsible for environmental damage caused by the waste generated, even if it was disposed of in accordance with the regulations in force at the time of disposal.

Another form of liability assignment is related to responsibility for environmental damage. In certain cases, not only the enterprise as a legal entity, but also high-ranking individuals within the company, may be held personally accountable for any actions or neglect that caused significant environmental damage (civil responsibility of an individual). Some countries have already such provisions, either in a specific law on responsibility for environmental damage, or in the civil/penal code. For instance, the Brazilian Environmental Crimes Law, passed in March 1998, includes such provisions and is considered by many to be the most modern legal text focusing on environmental crime.

Extended Producer Responsibility (EPR)

EPR aims to introduce environmental improvements throughout the life cycle of a product by making the manufacturer responsible for various aspects of the product's life cycle. The basic principle is to extend the responsibilities of the manufacturer beyond how the particular item is produced or what performance standards it meets, to include typically the return, recycling and final disposal of the product. Shifting responsibility for the end-of-life management of products from consumers and waste management authorities to manufacturers makes the manufacturers more aware of the issues related to the end-of-life management of their products. This feedback loop between the downstream (waste management) and the upstream (design of products) lies at the core of the EPR principle and is instrumental in improving the design of product and product systems, with the aim of reducing the environmental impact of the product's life cycle.

Under an EPR programme, producers bear a number of responsibilities such as the cost of the end-of-life management of their products (*financial* responsibility), involvement in the physical return of their products (*physical* responsibility) and informing waste managers of the content of their waste (*informative* responsibility). Concrete examples of these responsibilities include: return of end-of-life products; the establishment of returned goods sites/infrastructure for the end-of-life management of products; meeting recycling targets; the environmentally sound treatment of end-of-life products (physical and/or financial); the ban of the use of certain materials; and information to consumers on the content of the products. Concrete ways of fulfilling responsibilities assigned to respective parties are often left in the hands of producers who are assumed to do it in the most cost-effective manner.

An interesting example of applying EPR is the 1998 Home Appliances Recycling Law in Japan. Under the programme, manufacturers and importers of four large electrical home appliances (TV sets, refrigerators, air conditioners and washing machines) are required to take back their discarded products, dismantle them and to recover the components and material that can be reused or recycled. Differentiated recycling rate requirements of between 50 to 60 per cent by weight are set for the four products, to be achieved by means of product reuse, component reuse and material recycling with a positive monetary value.

Another example is a German regulation that requires car manufacturers to design vehicles in such a way as to allow between 30 and 50 per cent recycling of materials in automobile parts (percentage by weight, limit depending on the material). Finally, in the Netherlands, the price of all electronic consumer goods includes a surcharge for product return and recycling after use.

Facility operation standards/permits

The “use” of the environment or more explicitly, the generation of waste and emissions and their disposal or release into the environment by enterprises, is generally controlled and regulated by authorities. An activity that has a significant effect on the environment normally requires permission from a competent body of the State administration, or, increasingly, from local authorities. Permission is based on pollution discharge limits specified in the respective regulations.

Other permits include the so-called general operating permits and media specific permits that are related to specific aspects of the environment. Environmental permitting systems tend to be rather complex since they involve a range of institutions at the national, regional and local level and affect different stages of operation. By way of example, the following steps are required by law to construct and operate a waste water treatment plant:

- Acceptance of the general concept of the plant and its conformity with the local spatial development plan (issued by local authorities);
- Environmental Impact Assessment, evaluating the proposed location, technical measures and the ways envisaged to minimize any negative impact on the environment (to be accepted by a national EIA committee or a relevant ministry);
- Permission for the implementation of an infrastructure project to protect water resources (issued by the regional administration or competent authority);
- Building permit (issued by local authorities);
- Permission to begin a trial run of the plant (issued by the regional administration and/or environmental inspectorate);
- Periodic water permit for the discharge of waste water (issued by the regional administration or competent authority);
- Other relevant permits (e.g. sludge disposal, sanitary conditions, etc.).

A permit specifies the nature, extent and duration of activities for which it is granted. Emission of pollution within the limits specified in the permit may be subject to environmental fees or taxes (economic instrument). The level of fees and charges is set by law, and may be regularly updated. Emission of pollution without a valid permit, or in an amount exceeding the approved limits, is subject to sanctions of various kinds, including fines and suspension of activities.

The issuance and enforcement of the permits tends to be the responsibility of the environmental protection inspectorates, insofar as they exist in the country. Alternatively, it may be the responsibility of a special department of a relevant ministry, such as environment, health, natural resource management or labour. The most notoriously difficult issues in enforcing regulations include the limited resources of enforcement agencies, dispersion of efforts, in particular problems in enforcement in small and medium enterprises, the possible corruption of environmental inspectors, and costly and time-consuming legal procedures.

 EXAMPLE

In Poland, the Environmental Inspectorate publishes the “List of 80” exposing the eighty largest polluters in the country. The enterprises on the list are subject to regular monitoring and inspection by the authorities to check if they comply with environmental improvement plans. Additionally, regional inspectorates maintain their own priority lists for the areas of their jurisdiction.

In most cases, environmental permits are media specific (e.g. waste water discharge, waste disposal, health and safety). An interesting example of a non-media specific approach is the integrated environmental permit required in the European Union’s Integrated Pollution Prevention and Control Directive (see module 5 for further details).

One commonly used instrument is the Environmental Impact Assessment required in the approval process for new investments. The investor needs to carry out an EIA and include it in the set of documents that accompany a request for a location permit. The EIA may also be subject to periodic verifications, to check whether the agreed conditions are still being met, as there may be discrepancies resulting from changes in the actual technical design of the investment since the time the location permit was issued. The EIA law requires an assessment for environmentally sensitive investment projects and occasionally also for the local development and spatial management plans.

 EXAMPLE

Required permits in Nicaragua and El Salvador

Companies may sometimes be required to implement a structured environmental management system and to submit regular reports on their environmental performance in order to obtain an operating permit. In Nicaragua, the Ministry of Environment and Natural Resources requires that companies prepare an Integrated Plan of Gradual Reduction of Industrial Contamination (Plan Gradual Integral de Reducción de la Contaminación Industrial). In El Salvador, companies are obliged to present an Environmental Assessment (Diagnóstico Ambiental).

In closing the discussion of regulatory instruments, it is worth noting that some Cleaner Production experts proclaim CP as an open, transparent and voluntary process that uses an incentive-based approach; as such, regulatory measures and liability assignment may not be the most effective tool to promote the concept. There is, nonetheless, broad agreement that enforceable regulation is needed to deal with non-performing companies.

SLIDE: Market-based instruments

- Emission fees and non-compliance fines (Mexico: waste water fees depending on the location and pollution load, similar regulations in Uruguay and Colombia);
- Grants, subsidies and financial assistance for CP (National Environmental Fund in Colombia, Subsidy for Technological Conversion to avoid the use of CFCs in Chile).

- ❖ Market-based instruments (also known as economic instruments) are increasingly used in environmental protection. You may want to note that market-based instruments tend to support Cleaner Production, as they are based on the “polluter-pays” principle, and provide strong financial incentives to implement CP.

Background

The term “market-based instruments”, also called “economic instruments”, is used to describe a mechanism that changes the financial and economic conditions faced by enterprises when dealing with environmental pollution. Economic instruments are based on the “polluter-pays” principle, which states that polluters must bear full financial responsibility for pollution reduction or clean-up. The pollution prevention principle allows the internalization of costs that would not normally be incurred by the producer or the user (externalities).

Market-based instruments can be divided into three main categories based on how they affect a government’s budget:

1. *Public expenditure instruments* take the form of subsidies, grants and tax allowances and are the most familiar tool of intervention. Their function is to provide a financial incentive for individuals or companies to undertake an activity they would not otherwise engage in. Examples include grants for developing environmentally friendly technology, price supports for recycling industries and tax allowances for energy conservation;
2. *Revenue-generating instruments* include taxes, charges and fees. These, to some extent, can be viewed as the price to be paid for polluting, and have both an incentive impact and a revenue impact. However, taxes, charges and fees are generally too low to have any effect on environmentally damaging behaviour and so they serve mainly as a revenue generator. Effluent charges, tax differentiation between leaded and unleaded petrol, user charges for public waste disposal and depletion taxes on mineral exploitation serve to demonstrate how these instruments are used;
3. *Budget neutral instruments* represent a relatively new class of instruments within the policy arena, the most common of which is the deposit/refund system. They are designed to collect a surcharge on a potentially harmful substances or activities, and then refund that surcharge if the substance is recycled or restored, or use is avoided.

Environmental economists often list literally hundreds of individual instruments. At one extreme, they comprise fines or sanctions that are linked to traditional command-and-control regulations. At the other extreme, they include approaches that depend on consumer advocacy or private litigation to provide incentives for improving environmental management. Between these extremes are the more familiar tax-and-subsidy approaches as well as less commonly used mechanisms that rely on traded property rights.

In general terms, the following types of economic instruments can be distinguished:

- Charge systems: fees and fines for pollution, environmental impacts, access, road usage;
- Financial instruments: loans, grants, subsidies, revolving funds, green funds, low interest loans;
- Market creation: tradable emission permits, catch quotas, water shares, land permits;
- Bonds and deposit refund systems: bonds for forest management, land reclamation, waste delivery;
- Property rights: ownership, use and development rights;
- Fiscal instruments: taxes on inputs, exports, imports, pollution, resources, land use.

It is generally accepted that market-based instruments are inherently more efficient economically than regulatory standards in achieving a desired reduction in pollution. The reasons for this include the fact that they act as incentives for the development of more cost-effective pollution control and prevention technologies, provide greater flexibility to the industry in the choice of technology or prevention strategy and are consequently more cost-effective in achieving agreed levels of pollution, and they may provide the Government with a source of revenue it could use to support environmental and/or social initiatives that in turn may contribute to enhanced sustainable development.

The advantages of economic instruments include the following:

- (a) They do not prescribe specific technologies or solutions, but leave it to the target groups to decide whether they would prefer to control their output of emissions, to change their input of raw materials and energy, or perform a mixture of both;
- (b) They are better suited to deal with non-point sources of pollution that cannot be controlled by permits, but where there are proxies to be taxed;
- (c) They ensure that pollution control takes place where the marginal costs are lowest, thus ensuring substantial cost savings, probably by a factor of two to three;
- (d) Contrary to a fixed licence, they offer a constant incentive to reduce emissions, and are as such a far more dynamic instrument;
- (e) Because of these dynamics, they encourage greater innovation and stimulate the development of new and cleaner technologies;
- (f) Finally, economic instruments will generate revenue—sometimes in substantial amounts—that can be used for environmental or other purposes.

Economists tend to advocate economic instruments as a more or less pure alternative to command-and-control regulations. In practice, economic instruments are used within a broader mix of regulatory instruments, although this can prove complex in an institutional setting.

One common assumption about economic instruments is that they offer a handy substitute for outdated or inefficient command-and-control regulatory procedures. However, market-based instruments also require strong institutions, adequate legislation and effective monitoring and enforcement. They are not a panacea for either a weak regulatory framework or the lack of political will.

 EXAMPLE

Market-based instruments in Latin America

There has been substantial experimentation with market-based instruments in Latin America, and a wide range of mechanisms have been developed and applied. In most countries of the region, the environmental sector is largely subsidized by government funds, with resources drawn from national budgets, donations, grants, transferable compensatory certificates, fees, loans, contribution legacies, fines and other resources determined by legislation.

Brazil, Chile, Colombia and Mexico seem to have experimented most with economic instruments. The use of economic incentives has been directed mainly at controlling pollution and access to certain natural resources.

The major impetus behind many of the economic instruments in Latin America has been to raise revenue. Other potential objectives, such as reduction of environmental impacts or improving the cost-effectiveness of regulations, have been underemphasized or not achieved.

Most Latin American countries have existing legislation that established environmental institutions and provided for the use of economic incentives in environmental management. In reality, however, institutional weaknesses, such as underfunding, inexperience, unclear jurisdiction, or the lack of political will, limit the effective implementation of market-based instruments (MBIs).

The administrative intensity of market-based instruments remains high. Monitoring requirements, legal design requirements, public consultation needs and enforcement or collection needs of MBIs are not always noticeably different from strict command-and-control approaches. Economic instruments are, therefore, not a substitute for weak institutions or for direct regulation; the need for some regulatory elements is inevitable and a strong institutional base is a prerequisite to implementation.

Finally, economic instruments are not decided by a single policy maker, but have to be approved by a political system where the negotiating processes can dilute what is theoretically the most efficient type of mechanisms. In fact, there are often significant political constraints that act against the effective introduction of market-based instruments.

In some cases, a failure to make economic instruments and direct regulations complementary has had negative environmental effects. Command-and-control economic instruments are likely to remain in application in the future, but the use of penalties, taxes, fees, tax deductions and subsidies will probably be intensified as more prevention-oriented environmental policies come into being. There is, however, a tendency to expect too much from regulatory programmes based on economic instruments. Direct regulation is still necessary for several environmental problems and a mix of direct regulations and economic instruments is likely to be needed.



<http://www.rec.org/REC/Programs/SofiaInitiatives/EcoInstruments/sourcebook.html>

Emission fees and non-compliance fines

Environmental charges and taxes are direct payments from polluters and represent a clear application of the “polluter-pays” principle. Environmental charges include fees or taxes that are collected for the “use of environment” or the “right to pollute” within the accepted standards, and they tend to be tied to the conditions stipulated in operating permits. Another form of environmental charges are fines for

non-compliance with standards, or for operating outside the levels specified in the operating permit. A general classification of fees and fines can be drawn as follows :

Emission fees: direct payments based on measurements or estimates of the quantity and quality of pollutant discharged;

User charges: payments for the cost of collective services, are primarily used as a financing device by local authorities, e.g. for the collection and/or treatment of solid waste or sewage water;

Non-compliance fines: payments imposed on polluters who do not comply with environmental requirements and regulations.

Possible bases for fees and fines include:

- Measured or estimated emissions to air;
- Measured or estimated emissions to water;
- Energy products (used for transport purposes or for stationary purposes);
- Transport (annual vehicle registration taxes; vehicle sales taxes);
- Waste-water discharges (measured or estimated);
- Agricultural inputs (fertilizers; pesticides);
- Waste: general waste collection and treatment (user charges); individual products (packaging materials, batteries, tyres, lubricant oils, etc.);
- Ozone depleting substances (CFCs, halons);



EXAMPLE

Waste-water fee in Mexico

Mexico first established a fee on effluent discharge in 1991 in order to reduce pollution and encourage enterprises to take quality control measures. The charges per cubic metre of effluent vary with location; a similar initiative is being implemented in Colombia and Uruguay.

An interesting variation of the fees are performance bonds. Performance bonds are payments made to authorities in expectation of compliance with environmental requirements. The bonds are refunded when compliance is achieved.

A number of countries also collect charges for the exploitation of certain resources, especially in the mining sector and activities involving the extraction of construction materials.



<http://www.oecd.org/EN/document/0,,EN-document-471-14-no-1-3016-471,00.html>

Grants, subsidies and financial assistance for CP

There are a number of economic instruments that can facilitate the implementation of CP projects. Grants and subsidies for CP assessment and/or implementation can offer an incentive to the producer to determine options for CP and to make improvements to the process when the required changes may not yet have proven profitable in a particular industrial sector or region. Financial subsidies, for example in the form of low-interest loans, direct grants or preferential tax treatment, can target specific industries in order to stimulate technological development.

Soft loans (subsidized interest payments) for CP investments will encourage the producer, particularly the small and medium enterprise, to introduce changes in process or operation that can contribute to CP. SMEs are often family enterprises and, for various reasons, do not maintain huge assets in the name of the company. Consequently, they have difficulty accessing conventional loan facilities that require collateral. Special loan facilities that recognize the needs of SMEs as well as the competitive advantage of investments in CP (that may not show a corresponding increase in net assets) may facilitate investment for the introduction of changes in favour of CP.

Accelerated depreciation is a preferential tax facility offering companies the opportunity to apply accelerated depreciation on environmentally friendly operating assets. This provides an attractive liquidity and interest gain for these companies, since accelerated depreciation permits larger tax deductions in early years.

Last but not least, assistance may be provided for the preparation of bankable projects. One of the common complaints of companies is that banks are not willing to give loans for CP, while the banks maintain that the quality of applications (technical and financing proposals) is low. This presents an acute problem for many SMEs, where a lack of financial skills prevents many interested companies from developing the type of business proposal necessary to access a loan. One solution is a loan fund for project proposal preparation as a revolving fund, with loans for failed proposals written off but those for successful proposals repaid to the fund from the resulting loan proceeds.

EXAMPLE

The Mexican Foundation for Innovation and Technology Transfer (FUNTEC) has, for the last three years, been providing financial engineering and loans to small and medium companies implementing CP programmes. More than 40 small and medium companies received technical assistance and loans up to 80 per cent of the project cost. The financing is provided through the Pollution Prevention Fund (FIPREV).

Fiscal tools successfully used in Latin America include reforestation subsidies that were first implemented in Brazil and Chile at the beginning of the eighties.

 **EXAMPLE**
Environmental Funds in Latin America

The creation of special environmental funds is a recent development. An initiative contained in ALIDES (Alianza Centroamericana para el Desarrollo Sostenible) seeks to establish a Central American Fund for Environment and Development that would fill the funding gap in national and regional conservation projects. A similar initiative of this kind is Colombia's National Fund for the Environment. Brazil has a National Environmental Fund, created in 1989 to finance projects related to the sustainable use of natural resources and the management and improvement of environmental quality; government agencies and environmental NGOs can request funds for activities that meet environmental policy aims. Chile has its Environmental Protection Fund while Nicaragua is also considering the establishment of an environmental fund.

The National Environmental Commission's Technological Conversion Subsidy was set up in Chile for the conversion of refrigeration and plastic foam manufacturing equipment to non-ozone-depleting substances, with an endowment of US\$ 5 million for 1997-2000.



<http://www.minambiente.gov.co>

SLIDE: Market-based instruments/2
<ul style="list-style-type: none"> • Marketable permits (uptake of water in Chile); • Deposits and product charges (batteries and tyres in Hungary, bottles in Trinidad); • Demand-side management (The Costa Rican Institute of Electricity); • Harmful subsidy removal (energy prices in Nicaragua); • Green procurement guidelines (Energy Star programme in the United States); • Reduction in taxes, duties and fees (follows).

Marketable permits

Marketable, or tradable, permits are pollution quotas based on the principle that any increase in emissions from a given source must be offset by a decrease in emissions of an equivalent, and sometimes greater, quantity. For example, when a maximum value for pollution levels is fixed for a given area (a "bubble"), a polluting firm can set up a new facility or expand its activities only if it does not increase the total pollution load. The firm must therefore buy "rights", or permits to pollute from other firms located in the same control area, which are then required to decrease their emissions by an amount equal to the additional pollution emitted by the new activity.

Tradable emission permits enable pollution reduction measures to be applied wherever reductions are most cost-effective. A company that reduces emissions below the level required by law can receive emissions credits that can pay for higher emissions elsewhere. Companies can trade emissions among sources within a company, as long as combined emissions stay within a specified limit, or trade them with other companies.

In the case of electricity generation, for example, utilities can decide the most cost-effective way to use available resources to meet pollution regulations. They can introduce energy conservation measures, increase reliance on renewable energy, reduce usage, employ pollution control technologies,

switch to fuel with lower sulphur content or develop other strategies. Utilities that reduce emissions below the number of allowances they hold may trade allowances with other units in the system, sell them to other utilities on the open market or through auctions, or bank them to cover emissions in future years.

While marketable permits are most commonly used in respect of air emissions, the mechanism can also be applied to the extraction of natural resources, such as fisheries or water.

EXAMPLE

Under Chile's 1981 water law, the State grants existing water users (farmers, industrial firms, water and power utilities) property rights to water without charge. It auctions new water rights. Subject to certain regulations, these rights can then be sold to anyone for any purpose, at freely negotiated prices. They may also be used as loan collateral. In recent years, Mexico has also established property rights to water, although initially it has been placing substantial restrictions on intersectoral trading.

One controversy surrounding the use of marketable permits (and any pollution permits, for that matter) is that they legitimize the emission of pollutants. This not only meets with opposition on ethical grounds (buying the right to pollute), but also there are scientific concerns: What is the permissible level of pollution? Who will determine what is permissible? How should "uncertainties" such as those with CFC, DDT, or PCBs be addressed? At the very least, the precautionary principle should be applied.

Deposits and product fees

Deposits and product fees are intended to offer incentives for the controlled disposal of a product, modify the relative prices of products and/or to finance collection and treatment systems.

The deposit-refund system was traditionally limited to glass drink containers. In the deposit-refund system, a payment, or surcharge, is made when purchasing a product contained in a designated type of product (e.g. packaging). The payment, or deposit, is reimbursed when the product is returned to the dealer or a specialized treatment facility. This method can be applied to disposable containers such as Polyethylene Terephthalate (PET) bottles in order to reduce packaging waste and discourage its improper disposal. Deposits are sometimes also charged on car batteries.

Product charges are fees applied to products that create pollution either during manufacture, consumption or disposal (e.g. lubricant oils, disposable packaging, fertilizers, pesticides, batteries, etc.). The revenue may be used for financing collection and treatment systems or directed for other purposes. The United States EPA's Superfund, established to finance the clean-up of inactive hazardous waste sites, is fed by a charge on crude oil and chemicals, and on gross business profits exceeding a certain level.

Product fees may be applied to durable (household) appliances as an advance payment for proper treatment of the obsolete product at the end of its life cycle. A number of countries place a charge on car tyres. This is generally used to meet the costs of collection, recycling and disposal. Other product charges relate to chemicals used in households and companies, particularly solvable and flammable liquids, leftover paint and paint containers and lubricants.

Demand-side management

Demand-side management (DSM) is a tool that aims at controlling the need for a certain product and/or stimulating a more favourable distribution of demand peaks. This instrument is traditionally employed by electric utilities to influence consumer behaviour through varying prices of electricity. DSM programmes have a variety of objectives:

- (a) Energy-efficiency programmes reduce energy use, both during peak and off-peak periods, typically without affecting the quality of services provided. Such programmes use technologically more advanced equipment to provide the same, or higher, level of services (e.g. lighting, heating, cooling, drive power or building shell) with less electricity;
- (b) Peak load reduction programmes focus on reducing the load on a utility's system during periods of peak power consumption, or in selected areas of the transmission and distribution grid. This category includes interruptible load tariffs, time-of-use rates, direct load control and other load management programmes;
- (c) Load shape flexibility can be achieved by programmes that modify prices, cycle equipment, or interrupt service in response to specific changes in power costs or resource availability. These approaches include real-time pricing and time-of-use rates for pricing periods that have flexible hours. They also may include interruptible load tariffs, direct load control, and other load management programmes when those activities are not limited to peak load periods;
- (d) Load building programmes are designed to increase the use of electrical equipment or shift electricity consumption from peak to off-peak hours, thereby increasing total electricity sales. This category includes programmes that increase load during off-peak periods as well as programmes that introduce new electric technologies and processes.

The following example explains the problem in practical terms. Take a power plant that is environmentally inefficient at its maximum capacity or, for that matter, does not have sufficient capacity to satisfy the peak demand of all consumers. In order to minimize the unchecked growth of demand at the traditional peak hours, the price of electricity may be set high for that period, and low for periods where the demand is minimal (e.g. late at night). In this way, an industrial plant may schedule its non-essential energy consuming operations for the low-demand, low-price time.

In Costa Rica, in addition to a number of energy efficiency provisions included in the Law on Use of Energy, the tariff structure of the Costa Rican Institute for Electricity includes price mechanisms for demand side management, and the scheme is generally considered effective.

Demand side management programmes comprise the planning, implementation and monitoring activities of electrical utilities that are designed to encourage consumers to modify their level and pattern of electricity usage. This same approach, even if not called DSM, is used in the tariff structure of the telecommunications sector and on a pilot basis in water supply utilities.

Harmful subsidy removal

Harmful subsidies refer to all forms of financial support that artificially distort the price of resources or goods. Subsidies for natural resources are widely used to stimulate economic development. All have the effect that the user pays less than the market price for commodities such as energy, land, water and wood. While some subsidies are useful for stimulating economic or social development, protecting dependent communities or reducing dependence on imported resources, they can also encourage uneconomic practices and lead to severe environmental degradation.

Included are subsidies in the sectors of transport, energy and agriculture, which may have a distortional effect from an environmental policy point of view. For instance, the cost of water and electricity can be subsidized by the Government, to improve the competitiveness of local industry. Without crop supports, farmers would be less likely to overuse fertilizers and pesticides, a major source of water pollution. Without road transport subsidies, traffic congestion, urban air pollution and carbon dioxide emissions could be significantly reduced worldwide. And without energy subsidies, energy prices would rise, encouraging the use of more efficient vehicles and industrial equipment and reducing pollutant emissions.

In some countries, there are also subsidies for the import of second-hand equipment, which may encourage the purchase of outdated and inefficient technologies.

Excluded from this category are environmental subsidies from state or municipal budgets, or environmental funds, which can take the form of grants, soft loans, interest subsidies, etc.

EXAMPLE

Subsidies worldwide

Subsidies are widespread and pervasive in virtually all countries, both developing and industrialized; worldwide, governments are estimated to spend more than US\$ 700,000 million a year subsidizing environmentally-unsound practices in the use of water, agriculture, energy and road transport. The largest subsidy is agricultural support in OECD countries. About US\$ 335,000 million is spent annually on subsidizing farm production and farm incomes, a sum equivalent to about US\$ 380 per capita or US\$ 16,000 per full-time farmer.

Another example is support for energy production. Global energy subsidies currently total US\$ 200,000 million a year. A common feature of global energy policy is that more than 80 per cent of the subsidies concern fossil fuels, the most polluting energy sources.

Some subsidies established long ago for sound economic or social reasons no longer serve their original purpose. Subsidies can take many forms and are often hidden so that even the beneficiaries may be unaware of their adverse environmental impact.

Cheap resources and the use of low-cost, inefficient technologies have a negative impact on the adoption of Cleaner Production and should be addressed. Nicaragua is a good example of how a phase-out of energy production subsidies leading to significantly higher kW price resulted in increased demand for CP and energy efficiency measures in industry.

Green procurement guidelines

Government agencies and public institutions are major purchasers of a wide variety of goods and services. Some estimate that up to 20 per cent of purchases in any country involve the use of public funding. As a result, specifications for government purchasing tend to have a significant effect on how suppliers design their products and their characteristics. The Government has an opportunity to influence its suppliers towards the use of technologies for Cleaner Production and products by means of its purchasing behaviour, specifications for goods and a simple statement declaring that the promotion of Cleaner Production and products is government policy.

In the purchasing conditions specified in public tender announcements, the Government (or, alternatively, local authorities) may indicate a preference for cleaner technologies or products (e.g. non-chlorine paper, Energy Star computers and monitors, etc.) In the Netherlands, for example, several governmental organizations incorporated preventive environmental management plans into public tender announcements, including the purchase of energy-efficient equipment, non-chlorine paper, “green” public transport and electric cars.

EXAMPLE

Energy Star Office Equipment Programme. This volunteer initiative promotes energy efficiency through the investment in, and development of, energy-efficient and energy-saving office equipment. The programme distinguishes office equipment that meets specifications set by the EPA with the Energy Star label. This label enables customers to easily identify those products that provide the most efficient systems.



<http://www.unepie.org/pc/sustain/design/green-proc.htm>



<http://www.buygreen.com>

SLIDE: Economic instruments—taxes

- Argentina: reduction of waste generation taxes for companies with a recycling programme;
- Mexico: environmental taxes on gasoline depending on the lead content;
- Argentina: favourable taxes to promote the use of natural gas instead of gasoline;
- Lithuania: accelerated depreciation;
- Belgium: eco-tax on beer if the producer does not use to 95 per cent recycled bottles/packaging.

❖ This slide offers concrete examples of the most commonly used economic instruments, i.e., environmental taxes.

Background

Tax exemptions and allowances are the most widely used economic instruments. There are a number of different environmental charges and taxes, some of which have been discussed above in the section on emission fees and non-compliance fines. Systems based on fees and tariffs are widely used, although it should be noted that many instruments of this kind were conceived to support overall economic policies and collect resources, rather than for the purpose of environmental management.

A useful distinction between different kinds of environmental taxes is whether they are applied to emissions or products. Taxes on emissions are payments that are directly related to the real or estimated pollution caused, whether emitted into air, water or on the soil, or even as a result of the generation of noise. Taxes on products are applied to raw materials and intermediate inputs, such as fertilizers, pesticides, natural gravel and ground water, and on final consumer products such as batteries, disposable packaging and car tyres. Interestingly, the largest share of income from environment-related taxes tends to come from taxation on energy, followed by taxes related to transport.

In Argentina, the waste management law allows a reduction of the annual charge to waste generators and operators of treatment and disposal plants on condition they apply waste recycling and improve their plants. Similar tax exemptions are offered to industries to encourage the use of natural gas.

User tariffs that take into account the environmental cost of producing certain goods or services are becoming more common. In Chile, the Law on General Bases of the Environment foresees tariffs to cover the costs of pollution prevention or decontamination. In Panama, the Law on Forest Incentives exempts owners of forest plantations from paying income tax and makes investments in this sector wholly deductible.

Product charges with tax differentiation, leading to more favourable prices for environmentally friendly products and vice versa are used. Mexico has different tax rates on gasoline, depending on the lead content.

In Brazil, charges are levied for the use of natural resources (petrol, minerals and water) in a federal regulation dating from 1991 whereby companies pay a tax proportional to the economic value of the exploited resources, while revenues are distributed to the Federal Government and the states where the exploitation took place.

To avoid an eco-tax in 1995, Belgian beer containers had to be reused to 95 per cent.

EXAMPLE

Difference between environmental charges and taxes

The interpretation of environmental charges and environmental taxes can sometimes be ambiguous. While there are various possible definitions, in the European Union a distinction between charges and taxes is based on the intended use of generated funds. The term “environmental charge” is applied when the revenue from the instrument is earmarked for environmental expenditure; if the revenue is not earmarked for environmental expenditure, the term “environmental tax” is used.

SLIDE: Information-based strategies

- Establishment of a national CPC programme (CP in Chile);
- Waste prevention targets (the United States EPA’s goal for 2005: reduction in per capita municipal waste generation by 25 per cent against the 1990 level);
- Public recognition and awards (CP award for industry in Nicaragua);
- Product labelling (eco-labels in Chile and Uruguay for CFC-free products).

- ❖ Using the following three slides on information-based strategies, show a wide variety of options that exist to promote CP. Unlike command-and-control mechanisms and market-based instruments, information-based strategies are not very difficult to design and implement. They can also involve stakeholders who would not be reached with the other two (e.g. private citizens, NGOs etc.).

Background

Businesses cannot implement Cleaner Production programmes and techniques if they do not know about them. Nor can there be any public pressure, if the public is unaware of environmental problems

or the possible approaches to their solution. Information-based strategies are instruments used to fill in the knowledge gap. Instead of—or in addition to—prohibiting or restricting polluting activities, policy makers may choose to provide the public with information about environmental risks posed by certain pollutants, provide [the industry] with technical information on preventing pollution and/or to educate the consumer on environmental hazards or the characteristics of specific products.

The underlying assumption behind information-based policies is that actors may not take the optimum or even correct decisions, because they simply do not have sufficient information about available options. Two general directions can be distinguished as regards promoting CP information:

1. Technical assistance provided or financed by the Government or by CP centres can assist companies through training, pilot projects for technology transfer, studies of life-cycle impacts, information dissemination, environmental audits, assistance in obtaining environmental certification, etc.;
2. Information policy is proving to be an increasingly important instrument, aimed at the general public. The mandatory release of plant-level pollution data can generate market-driven changes in the behaviour of polluting firms. Similarly, the dissemination of information on CP options can build up market pressure on polluting companies.

Some specific examples of information-based strategies that may be introduced by government include:

- (a) Promoting the adoption of targeted, high-profile demonstration projects, to illustrate the techniques and cost-saving opportunities associated with Cleaner Production;
- (b) Requiring public disclosure of information on environmental performance by, for example, establishing a pollutant release and transfer register, stimulating greater voluntary corporate reporting, and requiring the provision of information on specific materials;
- (c) Initiating and/or supporting measures that address consumption, such as eco-labelling schemes and environmental product declarations;
- (d) Promoting the adoption of effective training initiatives;
- (e) Encouraging educational institutions to incorporate preventive environmental management in their curricula, particularly within engineering and business courses;
- (f) Issuing high-profile awards for enterprises that have effectively implemented Cleaner Production.

Establishing a national CPC programme

National and local governments may establish formal Cleaner Production strategies or programmes in order to act as a framework for the coordinated implementation of subsequent, more specific, policy instruments. While the UNIDO/UNEP National Cleaner Production Centre Programme is one of the best known, the national CP programme of Chile is an interesting example of a nationwide effort to promote CP.

 EXAMPLE

Cleaner Production in Chile

Chile's Cleaner Production policy, dating from September 1997, was designed by the Ministry of Economy to encourage competitiveness and good environmental management in business, support environmental preventive actions and develop Cleaner Production processes, including a more efficient use of energy and water. The national CP programme is currently a multi-stakeholder inter-institutional effort coordinated by the National Council on CP. The recently published *Policy to Support CP 2001-2005* builds on the 1997-2000 policy plan; its objectives include promoting public-private partnerships, simplifying and developing mechanisms in the existing regulatory framework to implement CP, education and capacity-building, and creating market-driven demand for CP.



<http://www.pl.cl/index.html>

The United States introduced a comprehensive system to promote CP on all levels of government. The EPA promotes pollution prevention through: voluntary pollution reduction programmes; technical assistance; funding demonstration projects; and incorporating cost-effective pollution prevention alternatives into regulations and other incentives.



<http://es.epa.gov/cooperative/international/>

Waste prevention targets

Target setting has featured predominantly in efforts to promote environmental improvements. Especially when it relates to waste minimization, target setting has been an important element of attempts to improve national-level recycling and to reduce the disposal of particular waste streams.

Strategic target setting, and the cost/benefit analysis it entails, provides a way for policy makers to decide if a possible CP or pollution prevention programme is likely to be sufficiently attractive to warrant further consideration.

 EXAMPLE

Waste minimization targets in the United States

The United States Waste Minimization National Plan is a voluntary programme of which the major goal is the reduction of hazardous waste. It focuses on reducing certain chemicals in wastes rather than the wastes as a whole. Its targets are to reduce the amount and toxicity of the most persistent, bio-accumulative and toxic constituents by 25 per cent by 2000, and by 50 per cent by 2005.

For more information:



<http://www.epa.gov/wastemin>

Public recognition and awards

Public recognition and awards are an effective instrument for building awareness of the concept of CP and promoting its practical implementation. There are a variety of awards in existence that recognize demonstrated accomplishments by industry in incorporating sound environmental practices, concepts and knowledge into planning and operating procedures. Some are specifically related to Cleaner Production (e.g. National CP Recognition for Industry in Nicaragua), while other schemes reward a proactive environmental approach.

In addition to the award schemes used in industry (not to be confused with a formal Environment Management System or product-labelling certification scheme), there are programmes that recognize individuals (e.g. policy makers or opinion leaders) and municipal governments.

EXAMPLE

PROPER Indonesia

The Programme for Pollution Control, Evaluation and Rating (PROPER) initiative was launched in Indonesia in June 1995 by the Environmental Impact and Management Agency. The environmental performance of individual industrial enterprises is evaluated and rated by the agency using a five-colour rating system. The highest-level category is reserved for those firms that, in addition to having performance beyond legal compliance, have implemented Cleaner Production practices and advanced environmental management systems. The results of the programme are publicly reported through the press and on the Internet, and those firms whose performance voluntarily exceeds regulatory standards are rewarded. The rationale is that the high-profile disclosure of the environmental ratings will be a powerful incentive for industries to improve their performance.

Product labelling

Product labelling refers to the process by which an independent, third-party entity verifies that a product has been produced and processed according to a specific set of standards. Environmental labels assist consumers to make responsible product choices, by informing them of the environmental impacts of products and providing a standardized means of comparing products.

Eco-labels aim to provide information to consumers about the environmental impacts of the product or service carrying the label. This allows consumers to express their environmental preferences through their choice of products. There are three broad types of eco-labels:

1. Comprehensive labelling schemes attempt to evaluate the total environmental impact of a product or service against a set of comprehensive pre-established criteria (e.g. Eco-label of the EU, Blue Angel in Germany);
2. Specific labelling schemes take one part of a product's life cycle and evaluate it against specific criteria (e.g. water efficiency or energy efficiency ratings);
3. Product labelling schemes have, to date, generally related to food items, for example, the labelling of organically grown produce.

 **EXAMPLE**
Eco-label of the European Union

The EU eco-labelling programme was launched throughout the European Community in 1992 to encourage the manufacturing of less environmentally damaging products, giving industry an incentive to produce cleaner, greener goods. The programme provides consumers with independent information to assist in the purchasing process, and the eco-label is awarded to products that have a reduced impact on the environment. All EU member States participate in the programme on a voluntary basis only. The eco-labelling programme currently covers the following products: washing machines, soil improvers, tissue paper products, laundry detergents, bed linen and t-shirts, indoor paints and varnishes, dishwashers, refrigerators, double-ended light bulbs, single-ended light bulbs and copying paper.

Today, a number of other official and private eco-labelling schemes are in operation all over the world. They include eco-labelling for products not containing ozone-depleting substances in Chile and Uruguay, the ECO-OK label for bananas in Central America and a variety of coffee certification schemes.

The nature of, and criteria for, private labelling schemes is often obscure, while official schemes such as the Nordic Green Swan, the EU Flower and the German Blue Angel explicitly demand that the award of the label be based on the life-cycle approach.

Eco-labelling can help enterprises adopt Cleaner Production and eco-efficiency by allowing them to choose more environmentally benign products, and to ensure that the inputs to their production processes have not been environmentally damaging to their own production. The International Organization for Standardization (ISO) has developed standards for eco-labelling. This standard, ISO 14021 will attempt to codify an internationally accepted way of labelling products and services.



<http://europa.eu.int/comm/environment/ecolabel/>

SLIDE: Information-based strategies/2

- Pollutant Release and Transfer Registers (PRTR) and public access to environmental information (Sistema Nacional de Información Ambiental in Chile; the Toxics Release Inventory (TRI) in the United States; publication of a list of companies not complying with environmental laws in Argentina);
- Public environmental reporting (Brazil: voluntary environmental reports of exporter companies);
- Information clearing house and technical assistance (state P2 offices in the United States).

PRTR and public access to environmental information

A unified national reporting system, generally known as a Pollutant Release and Transfer Register, is a national database or catalogue of potentially harmful releases to the air, water and soil as well as wastes transported to treatment and disposal sites. The data for PRTR comes from those industrial sources that are subject to reporting requirements. Facilities are required for regular reporting using a standardized form that serves as the basis for a structured computer database; this in turn makes it possible to aggregate data by chemical, region and industrial sector, and compare company performances. Several countries have launched a system to provide the public with access to information on polluters.

 **EXAMPLE**
Toxics Release Inventory in the United States

One of the first and most comprehensive PRTR systems is the Toxics Release Inventory of the United States, which provides publicly accessible information on toxic chemical pollution from manufacturing facilities throughout the country. It includes information on chemicals released into the local environment; how much of each chemical went into the air, water and land, or was transported for off-site treatment in a particular year; how chemical wastes were treated at the reporting facility; the efficiency of waste treatment; and finally, pollution prevention and chemical recycling activities implemented at the facility. Some states chose to go beyond the PRTR requirements, as was the case, for instance, of the Massachusetts' Toxics Use Reduction Act (TURA).

Since 1984 Brazil has attempted to maintain a national environmental information system, although it has faced difficulties in coordinating federal and state environmental agencies. Chile has had its national system of environmental information since 1994.

Argentina has opted for another method of providing the public with environmental information and exerting pressure. The National Secretary of Natural Resources and Human Environment has been granted the legal right to publish a list of violators of environmental regulations, causing negative publicity for the offending industries.



<http://www.epa.gov/tri/index.htm>

Public environmental reporting

Private enterprise and global markets have emerged as powerful economic forces in the twenty-first century, and the impact of business on the environment has attracted much attention in governance and policy debates. There has been significant progress in harmonizing financial reporting, and external financial reporting is guided by a widely accepted, common framework of principles and practices as to what should be reported or how, when and where.

Public environmental reporting is relatively new, dating back to the mid-eighties, and should not be confused with a PRTR system. A public environmental report (PER) is the voluntary public presentation of information about an organization's environmental performance over a specified period, usually a financial year. An organization's report may be published as a stand-alone document, a web site or as part of an annual report.

In putting together a PER, an organization has an opportunity to gain a comprehensive overview of the environmental aspects of its operations, since the information presented to its stakeholders is generally developed after examining current systems and processes and planning cost-effective improvements:

- First, an environmental audit allows a close look at current operating practices. Energy and material use is recorded as well as any waste occurring during operations;
- Second, the organization identifies areas where resource savings and waste reduction could be made and sets targets for these improvements;
- Third, systems are set up to meet the targets, monitor progress, identify ongoing improvements and develop formats for reporting performance and progress.

More recently, some organizations have expanded the concept of PER, by bringing the environmental and social aspects of operations together with traditional economic reporting to produce triple bottom line, or sustainability, reports. The Global Reporting Initiative (GRI) has developed a guide for sustainability reporting. There has also been an interest in developing common ways of measuring and presenting data so that reports can be compared over time. The World Business Council for Sustainable Development has developed outlines of the measurements, or metrics, which are useful for reports and provide background information about how organizations can move towards sustainability.

However, as reporting organizations are at liberty to report what they choose, there has been a consequent diversity in reporting practices, making comparability, relevance and reliability difficult to achieve. In an effort to provide a common framework, there are today more than 30 reporting frameworks, including the Global Reporting Initiative, United Nations Environment Programme (UNEP) and the Public Environmental Reporting Initiative (PERI).

In addition to those initiatives, some environmental management standards include [a publication on] an environmental report by a certified company (e.g. European Eco-Management and Audit Scheme (EMAS)).

EXAMPLE

Environmental reporting in Latin America

Commonly, those companies that export the bulk of the goods produced and are active in international markets develop corporate environmental reports. There are already various producers in Argentina, Brazil and Mexico publishing such reports, often at the same time adapting productive processes to ISO 14000 as a means of demonstrating compliance with international norms. In some countries, the lead has been taken by the most competitive sectors.

For more information:



<http://www.enviroreporting.com/>



<http://www.globalreporting.org/>

Information clearing house and technical assistance


Several Governments and international organizations are currently using a range of CP promotions and information transfer initiatives, including information clearing houses, technical publications, computer databases, local workshops and demonstrations, telephone hotlines and video presentations.

Information clearing houses serve to develop and maintain databases on Cleaner Production techniques and the environmental impact of materials in different stages of their life cycle. They also create a forum for the exchange of practical experience and data, and put organizations with information in touch with those seeking it. Waste minimization and CP clubs are a form of networking and are an effective means of promoting Cleaner Production practices, usually at the local government level. Another example is the International Cleaner Production Information Clearinghouse (ICPIC) managed by UNEP.




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

Demonstration projects are used to show the techniques and cost-saving opportunities associated with Cleaner Production in selected plants. Governments can promote CP through targeted, high profile demonstration projects in firms whose success will be credible to other firms in the sector. Disseminating best industry practices provides firms with relevant information they can use to alter their own practices, as well as a reference point to show how they are doing in relation to the industry as a whole. Very important in this context is benchmarking. The EPA managed EnviroSenSe initiative is a good example of an information clearing house.

 <http://es.epa.gov/>

It has, however, proven difficult to disseminate information about cleaner technologies—particularly to small and medium enterprises—in an effective manner. It has often been observed that results to date are not very impressive. As far as small and medium enterprises are concerned, many people maintain that the most effective information transfer approach for promoting cleaner technologies is by means of consultants who work on-site for a certain period of time. One example of an Internet-based approach is the Green Profit initiative. It is a database of CP quick scans in SMEs, intended to make other small companies aware of the environmental and economic benefits of CP.

 <http://www.greenprofit.net>

SLIDE: Information-based strategies/3

- Industry codes of practice (greenhouse gas emissions in the Netherlands);
- Voluntary pollution prevention agreements (coffee sector in Costa Rica; US 33/50 Toxic Chemical Emission Reduction Program);
- Public education campaigns (energy efficiency and water savings campaign).

Industry codes of practice

Codes of practice are generally sector-based and provide guidance to industry on a range of environmental issues such as resource usage, emissions, waste generation and disposal, occupational or health hazards and regulatory standards. The aim of such codes is to support improvements to industry by providing pertinent information and suggesting practices and processes that individual companies can adopt.

Codes of practice can also demonstrate best practices and can provide information and advice to firms about how to introduce environmental improvements. Best practice guidelines demonstrate best practices in the industry for firms considering improvements, and can also provide a benchmark for measuring progress.

Codes of practice may also provide a means by which regulatory bodies can work with smaller industries. Sector-based codes of practice can be developed into regulatory standards with cooperation between industry and government. For these codes to be effective, mechanisms need to be in place to encourage implementation of the code, monitor and publicly report on adherence, and to impose meaningful sanctions in addition simply to peer pressure.

Some of the codes of practice applied worldwide include the International Chamber of Commerce's Business Charter for Sustainable Development, and the Responsible Care Programme, which is overseen by the International Council of Chemical Associations.

 EXAMPLE

Responsible Care Programme

The Responsible Care Programme, initiated in Canada in 1987, is a voluntary initiative within the global chemical industry to handle products safely from their inception in the research laboratory, through manufacture and distribution, to ultimate disposal. The intention is to improve all aspects of health, safety and environment performance. There are provisions for reporting the results of Responsible Care to the international stakeholder audience every two years. The global chemical industry is represented by the International Council of Chemical Associations, and the programme is being implemented in 45 countries.



<http://www.icca-chem.org/rcreport/>

Voluntary pollution prevention agreements

Voluntary agreements are a pledge by one or more sectors of the economy to behave in a certain way in order to achieve environmental goals. In practice, voluntary agreements by the private sector are almost always motivated either by government threats of regulations and/or taxes or by government pledges of financial support.

Voluntary agreements can be an effective means of achieving pollution prevention objectives and can often work more quickly and with more flexibility than regulatory regimes. This, in turn, can help promote innovative cleaner technologies and cost-effective methods of reducing pollution. Voluntary programmes are an addition to, rather than a replacement for, regulations and economic instruments that protect the environment. Voluntary programmes can also serve to build up trust and credibility among industry, government bodies and the public.

For any voluntary agreement, a key issue is to decide, in an objective manner, just how well the agreement is being implemented by parties to it. This problem has not been fully solved as yet, and relevant policies are still evolving. Choosing a segment of the private sector that can offer a unified negotiating stance, monitor compliance and assure that the terms of the voluntary agreement are met by each subscriber, are particularly difficult issues.

 EXAMPLE

33/50 Program

This programme was a voluntary United States EPA initiative to reduce toxic waste generation from industrial sources. EPA, through its Toxic Release Inventory, identified 17 chemicals that needed to be reduced by 33 per cent by the end of 1992 and 50 per cent by the end of 1995. Industries could voluntarily enter into partnership with EPA and attempt to meet those goals. The programme included 1,300 parent companies, operating approximately 6,000 facilities throughout the United States. At the end of 1995, the programme announced that emissions from those 17 chemicals had been successfully reduced by 750,000,000 pounds.

Voluntary approaches are increasingly used in environmental policy and range from binding negotiated agreements between government and industry, to unilateral commitments of industry sectors (see the “Responsible Care” programme of chemical industries).

In Latin America, some progress has also been made as a result of voluntary agreements. Examples are the coffee entrepreneurs in Costa Rica and the programme of alcohol addition to gasoline in Brazil, demonstrating that strict regulation of resource use may not be the most efficient way of fostering technological change.

EXAMPLE

Voluntary agreements and greenhouse gases

Voluntary actions on the part of industry, Governments and organizations are achieving small, but measurable reductions in the emission of greenhouse gases. The 2001 studies presented by the World Energy Council and UNEP indicate that the number of new clean energy schemes, government initiatives and renewable energy projects will save each year the equivalent of 1 billion tons of carbon dioxide up until the year 2005. This saving is the equivalent of more than 3 per cent in greenhouse gases emitted in 2000.



<http://cleanerproduction.curtin.edu.au/>

Public education campaigns

Public education campaigns have traditionally focused on general environmental awareness. However, recently an increasing number of major educational campaigns are held on reducing waste generation, promoting recycling and the consumption of non-polluting products. In Latin America, more and more initiatives are promoting the efficient use of energy and water, e.g. radio spots on energy savings in Costa Rica.

While many initiatives continue to use the traditional media (books, flyers, media of communication), more and more resources are available on the Internet.



http://dmoz.org/Science/Environment/Pollution_Prevention_and_Recycling/

SLIDE: Avoid barriers created by new policy instruments

Environmental policy instruments supporting end-of-pipe measures can sometimes work against CP and the preventive approach.

Example: tax write-offs, or financial support for environmental measures tend to promote “traditional” end-of-pipe control measures.

- ❖ In this slide, note that there is a potential risk with some environmental policy instruments inasmuch as they are geared to support end-of-pipe instruments and may work against the preventive approach. Economic instruments, in particular, must be carefully examined to ensure that they do not directly or indirectly discourage investments in Cleaner Production and technology modernization.

Background

Environmental policy instruments such as financial subsidies (low-interest loans, direct grants, or preferential tax treatment etc.), can be targeted to specific industries in order to stimulate technological

development. Governments can introduce policy incentives that reduce the capital cost of the CP investment (tax credit or import tax exemption, for example) or increase the operational benefits of the CP investment (e.g. by the rational pricing of natural resources, environmental charges, lower value added tax on cleaner/more efficient products, etc.).

It is important to examine carefully the way that subsidies work to ensure that they do not create perverse incentives for environmentally counterproductive behaviour. Low-interest loans are often available for pollution control equipment, but not for CP or technology modernization (the latter is considered technological change and not eligible for soft loans). This may explicitly encourage end-of-pipe controls over process change investments.

A standard economic instrument such as accelerated depreciation allowances may act as an unintended barrier to Cleaner Technology investment by favouring the retention of fully-depreciated assets over reinvestment. Another example is that while the intent of a water pollution charge may be to reduce pollution, it may increase pollution if it is based on effluent concentrations.

When deciding on environmental policy in general, and on the choice of instruments in particular, it is, therefore, crucial to consider potential negative impacts of the proposed approach. Ultimately, the idea is to avoid creating distortions or barriers to CP through new instruments.

■■■ MODULE 5:

🕒 1 hour

RECENT TRENDS IN CP POLICY:

- New approaches to environmental policy development
- Municipal CP programmes
- Financing CP

■■■ OBJECTIVES OF MODULE 5:

Module 5 presents recent trends in CP implementation and new approaches to CP policy development. The implementation of preventive environmental programmes at the municipal level and CP financing frameworks are discussed in detail.

SLIDE: Recent policy tendencies

- Change in traditional focus of environmental management;
- Increased role of municipal and local programmes;
- Integration of ISO 14001/EMS with CP;
- CP audits in environmental permitting and access to funding;
- Voluntary initiatives from the private sector;
- CP financing framework;
- New areas of work.

- ❖ This slide outlines the topics that will be covered in module 5 where municipal programmes and CP financing will be discussed in detail.

SLIDE: Change in focus of environmental management

- Change of focus from process to product: Integrated Product Policy, and Extended Producer Responsibility;
- Shift from environmental media to industry-specific standards: IPPC Directive;
- Move upwards in the production process: supply chain management.

- ❖ Use this slide to present the new approach to environmental management, that goes beyond the standard control of production and environmental impacts on individual media. You may wish to observe that the focus on the product and the integrated control of pollution are already reflected in regulatory approaches in the European Union.

Background

Traditionally, environmental regulations and standards focused on the control of emissions from production, or on regulating industry's impact on individual environmental media at the end-of-pipe (e.g. effects of waste water discharge to water bodies, or impact of air emissions on local air quality).

In recent years, there has been a trend towards a more advanced approach, which takes into account impacts on the environment of a product or a service over its entire life cycle, that is from its design to its final disposal. Some interesting examples of this new trend include:

Integrated Product Policy (IPP)

This approach is being adopted to an increasing extent in the European Union. The five building blocks of IPP include: (a) measures aimed at reducing and managing wastes generated by the consumption of products; (b) measures targeted at the innovation of more environmentally friendly products; (c) measures to create markets for environmentally sound products; (d) measures for transmitting information up and down the product chain; and (e) measures which allocate responsibility for managing the environmental burdens of product systems.

Extended Producer Responsibility (EPR)

EPR makes the manufacturer responsible for various aspects of the product's life cycle, beyond simply the manufacturing stage (for more details on EPR, see the section on regulatory instruments in module 4).

Life Cycle Assessment and Design for Environment are two further examples of this trend.

The **Integrated Pollution Prevention and Control (IPPC)** approach is currently being applied in the European Union. The 1996 IPPC directive focuses on the integrated control of environmental emissions, for all environmental media, rather than on regulating individual media problems. It simultaneously aims to reduce natural resource and energy use, exposure to hazardous substances and releases of pollutants by economic activities. Perhaps the most important feature of the IPPC approach is that the emission standards are based on best available techniques, not necessarily originating from the EU itself. Interestingly, the regulator does not force industry to employ a specific technology; however, the plant should meet emission limit values based on current best practice. The IPPC directive therefore stimulates innovation and promotes economic progress with reduced consumption and pollution. To date, implementation of IPPC has generally been associated with the firm-level adoption of so-called integrated permits.

EXAMPLE

Information materials on Best Available Techniques (BAT) under the IPPC approach

Under the IPPC directive, specific processes in industry should comply with emission limit values based on the application of available state-of-the-art equipment and practices. To help industry meet its obligations, sector-specific documents (known as BREFs) present Best Available Techniques applicable in the sector, and provide guidance both to industry and to the regulator concerning state-of-the-art environmental measures. The BATs and the BREFs are published by the Institute for Prospective Technological Studies (IPTS) located in Seville, Spain, after being drafted by sectoral expert working groups.

 <http://eippcb.jrc.es>

Another interesting trend is the current focus on minimizing the environmental impact of products through **supply chain management**. In this case, producers of goods and services require suppliers and subcontractors to document their environmental performance as a prerequisite for continued business. This is particularly common in the case of the ISO 14001 standard, where certified companies agree to continue business with their suppliers on the condition that they obtain the necessary certificate within a specified period of time.

SLIDE: Municipal and local-level CP programmes

- Large number of existing municipal programmes on CP, EMS and Local Agenda 21;
- Physical proximity of players—regulators, industry and local residents;
- Advantage: easier to develop a programme of interest supported by the entire local community;
- Overview of benefits from the sound use of municipal resources.

- ❖ In this slide, demonstrate that there already exist various CP and preventive environmental programmes that focus on a municipal level. You may want to note that several international organizations are involved in promoting local-level programmes, and that in Latin America some municipalities have already achieved an impressive success.

Background

Most CP projects have traditionally been organized at the level of individual enterprises and are implemented as a company-specific initiative. In recent years, however, there has been a trend towards environmental and CP programmes related to municipal environmental management (i.e. focusing on environmental impacts of municipal operations). Frequently, such programmes are presented as initiatives to promote the sound use of municipal resources, and are organized with the Local Agenda 21 in mind.

In addition to helping reduce some key issues of concern for municipal authorities (e.g. waste collection and landfill management, or the provision of a safe and reliable supply of drinking water), the key advantage of a municipal CP project is the physical proximity of key stakeholders. Those stakeholders—local industry, authorities and regulatory agencies, and the public—are directly affected by the environmental situation in their area. This proximity makes it easier to mobilize the interest of the actors and to develop a programme supported by a whole community.

Some municipalities have developed regional CP programmes, although, most commonly this takes the form of organizing joint waste collection and minimization efforts for several settlements sharing a landfill. Another approach includes the establishment of eco-industrial parks where individual organizations can share pollution prevention infrastructure, and where industrial ecology is tested and implemented.

Additionally, there are CP programmes that involve several companies from the same municipality (cluster of companies), with the local government participating as a player. A good example of this approach is the Austrian ECOPROFIT model, presented in the following section.

Benefits of a local CP programme

From the perspective of a municipal authority, the implementation of a comprehensive CP/environmental management programme can bring many of the following benefits:

- Savings of money, natural resources and energy;
- Improved compliance with environmental regulations;
- Better relationship with the local community;
- Extended life of landfills;
- Reduced pollution and environmental hazards;
- Good publicity.

Developing a sound municipal environmental programme is doubtless a time-consuming and complex process involving political and social equity issues, in addition to technical considerations. Fortunately, there have already been numerous positive experiences in this field worldwide to serve as an example.



http://www.rec.org/REC/Publications/LEAP_Guide/default.html

SLIDE: The ECOPROFIT approach

- Voluntary for industry, but gives recognition and publicity;
- Aims to improve both economic and environmental performance;
- Work includes joint workshops, individual consulting and ECOPROFIT award;
- Municipality participates in the award process and supports enterprise networking.

- ❖ The ECOPROFIT approach provides a good illustration of how to organize a CP programme on the municipal level. You may want to note that several countries are currently following a similar approach.

Background

ECOPROFIT, an innovative scheme to implement joint Cleaner Production projects, was developed in 1991 in Graz, Austria. To date, more than 100 companies have participated in the programme in Graz itself. In total, more than 300 Austrian companies have implemented ECOPROFIT projects. Since 1995, the ECOPROFIT approach has been successfully used in Brazil, Czech Republic, Germany, Hungary, Slovakia and Ukraine.

An ECOPROFIT programme usually involves around 15 companies of different sizes and branches. Experience has shown that the participation of different companies helps promote innovation and creativity. The programme consists of three elements: joint workshops, individual technical consulting and the ECOPROFIT award.

During approximately 12 months of the project cycle, participants learn the principles of Cleaner Production and waste and emissions minimization. Strong emphasis is placed on waste management and on achieving water and energy savings. The overall goal is to increase the efficiency of companies by reducing their demand for raw materials and energy, and thus to minimize the environmental impacts caused by industry. Naturally, the improved environmental performance of the companies, leads to overall pollution reduction for the whole municipality.

The workshops—held for all participating companies together—are followed by individual training of technical experts in each company, each firm receiving between two and five days of consultant time. Topics covered in this component include: input/output data inventory and analysis, material flow analysis, process optimization, setting up the project team, design of a new waste management system, review of legal compliance, developing environmental indicators and the audit for the ECOPROFIT award.

Upon successful completion of the programme, a company receives an ECOPROFIT award. The companies must demonstrate the following: a waste management system and implementation plan (including minimization measures), environmental compliance, existing company environmental policy, documented environmental performance of the previous year and an environmental programme for the upcoming year, and internal organizational structure for preventive activities. The award has to be renewed every year, and an independent commission checks whether requirements have been fulfilled.

The award not only serves as a publicity tool for the companies, but it also helps gain the commitment of top management inside the enterprise as well as broader acceptance among the employees. It also allows companies to demonstrate to clients that they are working towards environmental improvements, without having to obtain costly EMAS or ISO 14001 certifications.

The key to success in this approach is close cooperation among participating companies, consultants and representatives of the municipality in implementing a programme. The advantages of the approach include:

- Improved contacts and relations between the company and authorities (fewer problems for companies with licensing procedures, etc.);
- Good publicity surrounding the recognition award at the end of the ECOPROFIT project (the award is given in a public ceremony by official city representatives);
- The programme is better anchored on the local level and can draw on the experience of previous participants (e.g. network of proactive companies in the city).

The factors most likely to motivate companies to participate include cost and material savings through preventive strategies, increases in process efficiency, legal compliance, better contacts with authorities, improved image and motivation of employees. The costs of participation are moderate, given that many activities are held jointly for all participants.

SLIDE: International programmes on local initiatives

- Local Agenda 21—developed for local governments;
- International Council for Local Environmental Initiatives (ICLEI);
- International Union of Local Authorities;
- Sustainable Cities Programme;
- ICLEI’s Network for Local Agenda 21 Latin America and the Caribbean;
- Environmental Best Practice awards.

- ❖ In this slide, highlight the large number of organizations and programmes involved in municipal environmental programmes. You may wish to stress that the awards could provide municipalities themselves with ideas for projects and initiatives. Consider presenting examples of relevance to your specific audience.

Background

There are dozens of international initiatives on local government and environmental management. A sample is presented below, together with a collection of links for further information.

Local Agenda 21

Extensive work at the municipal level is related to the Local Agenda 21. Local Agenda 21 is derived from the Rio Summit’s Agenda 21, and since the early nineties, hundreds of municipalities have been developing their own local environmental programmes. Often, they go beyond the boundaries of one municipality, and can involve a group of municipalities (e.g. sharing a landfill, water supply or infrastructure).



<http://www.gdrc.org/uem/la21/la21.html>

The International Council for Local Environmental Initiatives

The International Council for Local Environmental Initiatives (ICLEI) is an international environmental agency for local governments. ICLEI's aim is to create a worldwide movement of local governments to achieve tangible improvements in global environmental and sustainable development through cumulative local actions. Through its campaigns, ICLEI helps local governments to generate political awareness of key issues, to build capacity through technical assistance and training, and to evaluate local and cumulative progress towards sustainable development. The organization provides policy guidance, training and technical assistance and consultancy services to increase local governments' capacity. Currently, some 350 cities, towns, counties and their associations worldwide are members of ICLEI, with many more involved in specific projects.



<http://www.iclei.org/infoch.htm>

EXAMPLE

LA21 Capacity Building for Latin American Cities

ICLEI is coordinating the Local Agenda 21 Network for Latin America and the Caribbean, together with the German Gesellschaft für Technische Zusammenarbeit (GTZ). In 2001, activities took place in Chile, Colombia, Ecuador and Peru. The project focuses on building the capacity of municipal employees to apply Local Agenda 21 processes, the objective is to see these processes become part of regular municipal decision-making practices. For more information, check:



<http://www.iclei.org/redal21/capacidad/>

International Union of Local Authorities

Another active player in municipal and local projects is the International Union of Local Authorities (IULA). Among a variety of programmes related to decentralization and local governance, IULA has been involved in promoting partnerships for sustainable development, through its regional headquarters for Latin America and Central America. A partner organization is the Federation of Latin American Cities and Associations of Municipalities (FLACMA).



<http://www.iula.net/principal.asp>

Sustainable Cities Programme

The Sustainable Cities Programme (SPC) is a joint initiative of the United Nations Centre for Human Settlements (UNCHS) and UNEP, for building capacities in urban environmental planning and management. The programme is founded on cross-sectoral and stakeholder participatory approaches. There are currently some 50 pilot projects around the world. The Sustainable Cities Programme has developed a number of tools to support urban environmental planning and management, including a focus on sharing environment-development information and expertise, improving environmental planning and management capacities and managing environmental resources and risks for achieving sustainable development.



<http://www.unchs.org/scp/home.htm>

Local environmental best practice awards

One effective way to convince local players to take action is to show examples of existing success stories. As a result, many competitions are held for local environmental “best practice” awards. Best practices are generally defined as initiatives that make an outstanding contribution to improving the quality of life in cities and communities.

EXAMPLE

Best practice award for Belo Horizonte, Brazil: Street scavengers as preferential partners in waste collection

In 1998, the city of Belo Horizonte won the Local Initiatives Award for Excellence in Waste Management for its work with the Street Scavengers Association. The programme dramatically improved the social status of street scavengers by involving them in the planning and implementation of a comprehensive recycling and waste management programme for the town. Before the project started, the street scavengers were engaged in the informal collection of recyclable materials in the city, gathering their materials with manual carts, sorting it on the street and sleeping next to the recyclables.

In 1993, Belo Horizonte’s municipal administration responded to demands from the scavengers for the right to work in the city and to have a proper place to sort their materials. The city established a selective handling and treatment system for solid wastes, working with the Street Scavengers Association as its partner. The new drop-off system required greater cooperation from the public as it became more engaged in the process of recycling waste. Several warehouses were established, eliminating the need for sorting on the streets. There are currently three sorting warehouses and 300 collection containers located throughout the city. From an initial membership of 31 scavengers in 1993, the cooperative grew to almost 250. In terms of quantity, collection has increased from 15 tons to 500 tons per month.

Summary of some best practice awards can be seen on:



<http://www.bestpractices.org/>



<http://www.sustainabledevelopment.org/blp/awards/>

For more details on many other municipal environmental initiatives, refer to the following links:



<http://www.sustainablecities.org/links.htm>



<http://wbweb4.worldbank.org/nars/cleanair/spanish/index.htm> (available in Spanish)



<http://habitat.aq.upm.es/bpn/lista.html> (available in Spanish)



http://www.siscom.or.cr/reg_mpra.htm#base

SLIDE: Integration of CP and ISO 14001/EMS

- Decreased competition between CP and ISO 14001 consulting communities;
- Mutual reinforcement: CP focuses on operational level, EMS on the management organization;
- CP used as a tool to demonstrate continued environmental improvement;
- Municipal CP programmes leading to EMS certification.

- ❖ In this slide, show that joint implementation of CP and environmental management systems is becoming a more common practice, and explain how the integration of the two concepts can benefit the company.

Background

In the early years of ISO 14001 and CP, the consulting communities most closely involved with each of the two concepts sometimes perceived each other—wrongly—as competitors. There is no reason to view CP and ISO 14001 as rival approaches, because in fact they are complementary. Several examples of the successful merging of the two concepts are now available, and experience shows that a CP programme can be an integral part of work to introduce an environmental management system.

The rationale for the integration of the two concepts is that Cleaner Production focuses on the operational (plant floor) level, while an EMS system requires the development of a strong and formal management structure and procedures. CP can be used effectively to demonstrate the continued environmental improvement required under ISO 14001. CP is also likely to generate operational savings to the company, offsetting in part the cost of the EMS certification process. Conversely, a functioning EMS can help to keep a CP programme on track.

There are a number of examples where CP projects and EMS certification were combined in municipal operations. The Czech Republic, for instance, has been pioneering work on the EU's EMAS certification with a CP project. In Mexico, some municipal authorities are currently completing the certification process according to ISO 14001.

 EXAMPLE**ISO 14001 implementation kit for local authorities**

In 2001, a consortium of four organizations, UNEP, Environment Canada, the International Federation of Consulting Engineers and ICLEI, developed a training package for local governments implementing EMS. The kit was based on ISO 14001:1996, and includes accompanying exercises, guidelines, resource kits and case descriptions. It can serve as a resource for trainers and municipal staff and acknowledges the activities undertaken by local governments towards sustainable development. Further information can be obtained from ICLEI at the e-mail address: training.centre@iclei-europe.org

SLIDE: CP in permitting, enforcement and financing support

- Environmental permitting may include elements of CP;
- Environmental inspectors could promote CP;
- Implementation of CP programmes is mandatory in enforcement actions;
- Financial assistance for environmental investments could require a prior CP assessment.

- ❖ This slide presents how CP and pollution prevention can be incorporated into the permitting process, enforcement actions and decisions on providing financial support to companies. The key message is that there already exist proven ways to make CP an integral part of regulatory mechanisms.

Background

Cleaner production has traditionally been considered a voluntary initiative, left to companies to adopt if they consider it appropriate. In contrast, obtaining environmental permitting and complying with the regulations are obligations that have to be met. However, enforcing regulations and complying with prescriptive laws are both costly to all parties involved.

Consequently a number of countries have decided to make CP (or pollution prevention/source reduction) an integral part of the permitting process. Some of the strategies that have been used to promote CP and prevention in the permitting process include pre-permitting interviews and distribution of information, permit avoidance through CP, pollution prevention planning, or explicit pollution prevention permit conditions.

CP in the permitting process

As part of permitting, firms may be required to undergo Cleaner Production audits of their plants and to implement suggestions. In most cases, however, a CP review is a part of the process, and normally not an obligation to implement all potential measures identified. The following list contains possible approaches:

- (a) Permit application form includes questions that would help the authorities determine if CP potential exists in the applicant's facility;
- (b) Permit application package includes a brochure on the benefits of CP and contact information of a CP technical assistance office;
- (c) A permit can be issued stipulating that a CP programme must be developed in the first year of operation, or even prescribe that companies must demonstrate that they have a waste minimization plan in place at the beginning of operations. Typically, companies are then required to submit annual progress reports;
- (d) Reduced record-keeping, inspections or permit fees are applied to companies that implement a CP programme;
- (e) Environmental fees and charges are set to encourage implementation of preventive techniques;
- (f) Some permits issued are based on an integrated analysis of processes rather than on environmental media specific impacts.

The above points presuppose that the permitting and enforcement authorities have the necessary knowledge of CP opportunities. Some authorities have prepared guidance material to enable writers and inspectors to incorporate pollution prevention in permits and inspections. The guides present the areas in which CP measures may be considered for incorporation. Another possibility is to create inspection teams that include a regulatory compliance expert and a CP expert. Team activities could encompass: joint site visits by environmental inspectors and pollution prevention staff; inspector-only visits with inspectors referring facilities to the CP programme; and inspector-only visits with inspectors conducting a compliance inspection and CP assistance. Frequently, CP staff provide information and technical assistance to inspectors and facilities on preventive options that could return the facility to compliance and/or eliminate pollution generation.

CP in environmental inspections

Environmental inspectors can play a role in encouraging the adoption of CP. In practice, the inspectors can:

- Distribute pollution prevention literature during inspections, including fact sheets or brochures on CP. Facilities can then make their own decisions about pollution prevention strategies;
- Conduct a facility pollution prevention survey in addition to distributing a booklet on pollution prevention options and fact sheets for specific industries, inspectors also put pollution prevention questions to facilities;
- Visit the facility, review the CP plan and discuss the plan with the facility personnel. After the site visit, the inspector sends the facility a letter either approving the plan or identifying deficiencies and specifying a date by which the plan should be revised;
- Refer the company to a CP expert or technical assistance office.

There is, however, always the risk that, by imposing rigid requirements for the implementation of a CP programme, companies may invent fictitious CP initiatives simply to comply with the demand. It is, therefore, important that any such approach should highlight the economic benefits to the company.

Compliance enforcement

Another new field is the use of CP in compliance enforcement. In most countries, companies caught in breach of environmental regulations are subject to fines and other financial penalties. CP can be used not only as a tool to bring the company back to compliance, but also to reduce the amount of fees due. Some activities that may offset penalties include: preparing a CP plan; designing, installing and testing a specific CP project; training employees to run the project; and/or initial capital investment for start-up.

For example, EPA uses pollution prevention as a tool in negotiating injunctive relief and/or in negotiating supplemental environmental projects to offset civil penalties for non-compliance. Pollution prevention-based injunctive relief requires a facility to use pollution prevention methods to reach the legally required compliance levels. Pollution prevention remedies must be sufficient to cure the violation and prove technically and economically feasible for the facility. Supplemental environmental projects (SEPs) are “environmentally beneficial projects, which a defendant/respondent agrees to undertake in settlement of an enforcement action, but which the defendant/respondent is not otherwise legally required to perform”. SEPs are an innovative settlement approach that often result in mitigating a portion of a civil penalty in exchange for a legally enforceable commitment from the company to undertake a specific project that goes beyond compliance.

CP as a condition to receive state financial support

Lastly, in several countries the State provides financial support for environmental improvements in industry (e.g. through national environmental funds). In some of those countries, the applicant has to include CP evaluation as a part of the application process in order to receive funding. While the company is free to implement—or otherwise—the measures, it must undergo the process. The underlying rationale is that such a policy tool will provide an incentive for a win-win measure.



<http://www.epa.gov/epaoswer/hazwaste/minimize/>

SLIDE: Initiatives of the private sector

- Voluntary environmental agreements and programmes administered by industry;
- World Business Council for Sustainable Development: eco-efficiency and eco-effectiveness;
- International Network for Environmental Management;
- In the Far East, productivity centres to improve competitiveness of industry.

- ❖ This slide can serve to show that industry itself is developing programmes on preventive environmental management, where CP is one of the tools. Note that this demonstrates a practical, demand-driven, approach to increase competitiveness of enterprises.

Background

Some industrial sectors have been subject to public scrutiny and increased regulatory pressures because of their environmentally-damaging performance. In response to this, sectors such as the chemical and pharmaceutical industry, energy production, mining and resource extraction, foundries, or even car manufacturers and household appliance producers initially created lobby groups to represent their views and protect their interests.

In some cases, however, there has been an increased industry-driven effort to improve environmental performance. Industry's codes of practice, voluntary agreements, pollution prevention targets and sector-specific environmental programmes are examples of such initiatives. Details of some of those initiatives are presented in module 4, in the section on information-based strategies. Others include:

- Industry-specific programmes, e.g. the chemical industry's Responsible Care programme;
- Negotiated agreements regarding the phase-out of certain chemical compounds (e.g. lead, cadmium and some volatile organic compounds);
- Voluntary agreements on the reduction of greenhouse gases (e.g. energy efficiency in the Netherlands, multisector initiatives of the World Energy Council and UNEP, etc.);

- Corporate environmental policies, stating that a multinational company will apply in its overseas operations the same environmental standards as in the home country.

There exist high-profile organizations set up and managed by the industry itself that deal explicitly with environmental performance.

Since the early nineties, the World Business Council on Sustainable Development (WBCSD) has been promoting the concept of eco-efficiency, which is directly based on improving competitiveness and profitability. The WBCSD recently moved a step further, to the concept of eco-effectiveness, which addresses not only the question “Are we efficient?” but also “Are we doing the right things?” The rationale is to avoid optimizing, in an incremental way, an ineffective system.

EXAMPLE

World Business Council for Sustainable Development

The World Business Council for Sustainable Development (WBCSD), with its headquarters in Switzerland, is a coalition of about 150 international companies committed to, and involved in, work on environmental protection, social equity and economic growth. Members come from more than 30 countries and 20 major industrial sectors. WBCSD also cooperates with a global network of national and regional business councils and partner organizations. In broad terms, WBCSD aims to develop closer cooperation between business, government and all other organizations concerned with the environment and sustainable development. Another goal is to encourage high standards of environmental management in business itself.

The declared objectives of WBCSD are to provide business leadership, to participate and contribute in policy development, to share and disseminate best practices and to ensure global outreach.



<http://www.wbcd.org>

The International Network for Environmental Management (INEM) is another global industry-funded programme, with almost 30 countries represented. In addition to involvement in the setting of international environmental standards, participation in policy development activities within Business Agenda 21, and carrying out global environmental management surveys, INEM produces a wealth of interactive materials, information and tools on how to improve environmental management in companies. INEM has a strong commitment to improving environmental performance, especially in small and medium enterprises. Among other things, INEM developed the ISO 14001 Speedometer, which is a tool to monitor the implementation worldwide of the ISO 14001 standard.



<http://www.inem.org>

It is also worth noting that, in many countries, industry itself is financing technical assistance centres on issues of interest. Such centres, sometimes located within an industrial association, sometimes operating as an independent entity, can provide clients with low-cost consultancy services and advise on topics such as quality management, implementation of EMS, resource efficiency and productivity, energy efficiency and others. Interestingly, national productivity centres are common in the countries of East Asia, where they play a strong role in increasing the competitiveness of domestic industry.

SLIDE: The finance sector and the environment

- Financing environmental expenditures;
- Environmental considerations at international financing institutions;
- CP beneficial both for the lender and the borrower;
- Banking statement on environment and sustainable development.

- ❖ This slide presents issues related to financing environmental expenditures, and shows how the position of the finance sector has been changing, from an initial lack of interest in the environmental aspects of lending, to more active participation.

Background**Financing environmental expenditures**

In many countries, the environmental sector is mainly subsidized by government funds, with resources coming from national budgets, donations, grants, fees and fines, environmental taxes and product charges as well as other resources determined in the legislation. Support can take the form of grants, soft loans, specialized credit lines, or financial or technical assistance for project preparation and implementation. In recent years, there has also been important support from international aid and bilateral technical cooperation programmes, aimed mainly at setting up and strengthening environmental institutions.

Most environmental expenditures in developing countries have been directed at national-level public programmes, such as water and waste-water infrastructure, sanitation, biodiversity and nature protection, among others. Securing funding for environmental protection in industry, especially private industry, tends to be left in the hands of companies themselves. However, in many developing countries, weak financial institutions and limited access to credits are significant limiting factors for the development of businesses. As a consequence, the availability of funds for environmental projects, especially CP, is limited.

CP as a benefit for both lender and borrower

Initially the financing sector was not very concerned with the environmental aspects of their lending, and consideration of environmental issues by financial institutions is a fairly new phenomenon. Even in developed countries, banks have only recently started to draw up environmental policies, and very few have established detailed procedural guidelines on how to include environmental issues in lending and investment. The main incentive for financial institutions to include environmental aspects in lending would be if the country had high environmental standards and a corresponding system of enforcement. Companies could then avoid stiff penalties through better plant management. Unfortunately, in most developing countries this is not the case, and this tends to stifle initiatives to take environmental aspects into account in lending.

Even without the framework and enforcement mentioned above, the adoption of Cleaner Production by enterprises may still bring cost savings and better financial viability through reductions in raw material usage, energy savings, process efficiency and waste minimization. Cost reduction, avoidance of expenditure on end-of-pipe treatment, modernization and upgrading production, risk minimization and better management result in improved efficiency and enhanced competitiveness. This is good both for the enterprise and for the lender, as it could mean that an enterprise will be in a better competitive position and thus better able to repay a credit.

Environmental considerations at international financing institutions

The attitude of international financing institutions (IFIs) towards the environment has been changing since the beginning of the nineties. Most IFIs, such as the Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank, or the World Bank, have built strong environmental appraisal procedures into their lending process. This was done partly as a result of some highly publicized projects that resulted in environmental and social damage (e.g. large-scale dams, retention reservoirs, etc.) and partly thanks to a number of international initiatives, starting with the Statement by Banks on the Environment and Sustainable Development.

EXAMPLE

Statement by Banks on the Environment and Sustainable Development

Protecting the environment cannot be achieved by Governments alone, and the private sector has a particular perspective on environmental issues. The finance sector could play a strong role in promoting Sustainable Development, through its link with commercial activities, including some activities that damage the environment. In preparation for the 1992 Rio Conference, the “Statement by Banks on the Environment and Sustainable Development” was signed by some 30 banks, expressing their environmental commitment. The banking statement was revised in 1997, and took the form of a “Statement by financial institutions”. To date, 170 financial institutions worldwide, with more than 500,000 employees, are signatories. In a separate development, a Statement of Environmental Commitment by the Insurance Industry was signed by 90 insurers and reinsurers, within a programme of cooperation that has been in existence since 1996.

The key component of both statements is a commitment to sustainable development and support for the precautionary approach to environmental management, which aims to prevent environmental damage. The signatories also undertake to promote public awareness and communication.

Given the stronger market position that enterprises are in a position to enjoy as a result of preventive environmental management, financing institutions could build environmental requirements into their credit evaluations of firms, and thereby include environmental aspects in the evaluation of all lending. This is already being done at the European Bank for Reconstruction and Development (EBRD), which requires its financial intermediaries (smaller national banks, managing credit lines of EBRD for small projects in a given country) to carry out an environmental due diligence analysis before lending. Interestingly, this approach may represent a risk for certain enterprises that find themselves unable to obtain loans.

Most commercial banks, however, fail to consider environment at all in loan appraisals, and the above-mentioned statements have not been translated into a common practice of lending for CP projects. Wherever the environment is taken into account, it is typically addressed using end-of-pipe technologies.

SLIDE: Barriers to financing Cleaner Production

Access to financing identified as a barrier for implementation of more advanced CP measures:

- Unfamiliar topic to credit officers;
- Lack of specialized credit schemes for CP;
- Poor project preparation capability;
- High (perceived) cost of CP implementation;
- Lack of enabling environment.

- ❖ With this slide, present the main obstacles to a more widespread financing for CP. While both the lender and the borrower can benefit from the application of CP, there are certain problems that need to be addressed to take advantage of this opportunity.

Background

More often than not, the current skills among borrowers and technical CP consultants are insufficient to prepare bankable loan applications. The implementation of CP measures—beyond the low-cost, good housekeeping measures—calls for a customized approach to lending, as well as financial officers trained to evaluate the benefits of Cleaner Production. Strengthening the capacity of the financial sector in developing countries is thus an important prerequisite to foster cleaner and more efficient production.

There are several obstacles to easier availability of financing for CP, including:

- Inability of financial institutions to assess the technical and financial components of CP investment proposals. This results from the fact that the impact of CP on the profitability of investments and the creditworthiness of borrowers is not understood by credit providers, who also lack the technical knowledge to assess the CP content of investment proposals;
- Absence of credit schemes customized to Cleaner Production investments. The key problems here are the focus on traditional collateral value, short repayment periods and high interest rates, as well as a tendency to provide working capital only;
- Poor project preparation capability, and inability to develop creditworthy CP investment proposals. This is reflected in the fact that most CP assessments undertaken are technical and do not aim to result in creditworthy investment proposals, including business plans;
- High cost of implementation of Cleaner Production, combined with the common perception of the risk associated with CP investment, as well as limited local availability of CP-driven technology and devices as well as engineering and installation services;
- The absence of an enabling environment for Cleaner Production, which means lack of conducive policy environment for Cleaner Production and a low demand for CP from the industrial community.

There are no easy solutions to these problems. However, financial institutions should familiarize themselves with the economic advantages of Cleaner Production, and loan officers should receive training in evaluating such factors. This implies improving their knowledge about the concept of Cleaner Production, environmental management systems, material losses and specific environmental costs. Banks could be encouraged to stipulate environmental conditions when giving credits.

Experience shows that the best intermediaries to stimulate an increased understanding of the benefits of Cleaner Production are financial institutions in donor countries.

Even limited improvements in access to financing can lead to significant results in the introduction of Cleaner Production, provided the implemented activities yield encouraging environmental and financial improvements, serving as a model and reference for future projects.

SLIDE: Some policy responses to encourage lending for CP

- New emphasis on promoting CP;
- Demonstration programmes for the finance sector and industry to show profitability of CP;
- Capacity-building programmes and assistance in preparing financing proposals;
- Need for innovative financing mechanisms.

- ❖ Referring to the barriers discussed in the previous slide, note that some new policy responses have been used to help both the finance sector, CP Centres and borrowers. Show that the issue of access to financing has been gradually gaining importance among CP practitioners and policy makers in recent years.

Background

According to estimates of UNEP and the Asian Development Bank, between 30 and 70 per cent of current industrial pollution results from: wastage and inefficiencies from the use of obsolete technologies; a lack of knowledge of CP potential; a low level of environmental awareness; and poor enterprise management. Still, the demand for CP from industry has been rather limited, especially in those countries with lax and poorly enforced environmental regulations, subsidized resources and low environmental awareness.

In order to stimulate interest in CP, there has been a change of emphasis in promoting the concept towards businesses and the financial sector. This is well illustrated by the following definition of CP, presented by UNEP during a workshop for Financial Services Initiative in Manila in 2001:

“Cleaner Production is a preventive approach applied throughout the life-cycle of a process to reduce the unproductive costs associated with remedial action.”

Investments in CP can be economically attractive thanks to the reduction of costs for input materials, energy and water, expenditures on waste treatment and disposal, as well as increased production and better output quality. Their payback period may, however, be longer than is customary in a typical new investment. On the other hand, some experts observe that, except for the low-cost housekeeping and management improvements of Cleaner Production, there is little to separate Cleaner Production investment from ordinary technology replacement. It can be argued, therefore, that Cleaner Production investments should be included into the mainstream business rather than handled through a dedicated credit line.

Regardless of the above dilemma, the issue of financing has been gaining prominence in recent years. During the CP6 meeting in Montreal in October 2000, a special session was held on CP financing. The meeting panel recommended that:

- Accounting practices of enterprises should be improved to reflect actual costs;

- It is necessary to strengthen capacity of financial institutions, business schools, academia and media to understand the benefits of preventive strategies;
- Innovative financing mechanisms (e.g. revolving funds, dedicated credit facilities) should be created to promote implementation of bankable CP projects.

Moreover, a recent UNEP study on past investment practices recommended that:

- Governments could signal change towards mainstreaming CP into national strategies, and use instruments that promote CP in retrofitting and new investments;
- Industry could act to create ongoing demand for CP measures that will encourage continued progress;
- Educational institutions should integrate preventive approaches into formal education programmes;
- Organizations providing finance and financial services could view CP as an investment opportunity and seek financial innovation. Investors and financial institutions could increase capacity for bankable project preparation, mainstream CP into a bank's portfolio and create and promote credit schemes designed especially for CP.

Efforts to develop innovative financing mechanisms are on the increase. One strong incentive for CP implementation would be a requirement that any financial assistance offered by a bank for industrial investments should require a prior CP assessment. This would help improve the quality of project preparation, reduce investment costs and stimulate demand for better environmental management in enterprises.

A less radical approach would be to modify existing environmental funding mechanisms by adding a mandatory CP component (e.g. not providing support for end-of-pipe investments without a prior CP assessment). For example, the Czech National Environmental Fund considered a specific financing mechanism for CP projects.

SLIDE: Examples of pilot CP-financing programmes

- UNEP's CP Financing Initiative;
- Nordic Environment Finance corporation (NEFCO) Revolving Fund;
- Mexico's FUNTEC for SMEs;
- Technical assistance programmes.

- ❖ With this slide, highlight some successful programmes on financing CP. Depending on the audience and the objectives of the session, you may wish to provide more details on how the mechanisms work, and what kind of projects are financed (see the relevant web pages for further details).

Background

Several initiatives have been launched in the last few years to demonstrate the benefits of CP.

In 1999, UNEP's Division of Technology, Industry and Economics launched the project "Strategies and mechanisms for promoting Cleaner Production investments in developing countries", financed by the Government of Norway. The project aims to demonstrate how helping financial institutions

understand the importance of CP can stimulate this kind of investment. Within the project, it is also envisaged to assist CP experts in developing creditworthy investment proposals. The project is expected to run from 1999 until 2002, and includes pilot demonstration projects in Guatemala, Nicaragua, United Republic of Tanzania, Viet Nam and Zimbabwe.

The project has a strong information exchange and experience-transfer component. Various technical and promotional materials have been prepared, a study on investment practices in 8 countries and 50 financing institutions has been carried out and a dedicated web site set up. Further, practical training was provided in Central America and Eastern Europe.



<http://www.financingcp.org/about/about.html>

EXAMPLE

NEFCO's Revolving Fund for Cleaner Production

The Nordic Environment Finance Corporation (NEFCO) is a risk capital institution financing environmental projects in Central and Eastern Europe. NEFCO was established in 1990 by the five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden). Its purpose is to facilitate the implementation of environmentally beneficial projects in neighbouring countries. NEFCO is located in Finland, and has a capital €80 million.

In 1998, NEFCO set up a revolving facility to finance priority Cleaner Production investments in north-western Russia and the Baltic countries. The objective is to finance—on favourable terms—the implementation of high-priority Cleaner Production investments with a payback period of no more than three years. The investments should be commercially viable, and the resulting earnings are to be used to repay the loan. The investments are expected to be model projects to upgrade business and environmental performance through low-cost measures. Furthermore, the financial participation of NEFCO will help attract financing from other sources.

Eligible for funding are state-owned enterprises, local or foreign private entities and joint ventures. The size of a loan ranges from US\$ 50,000 to US\$ 200,000. The criteria for providing a loan is the cash flow of the Cleaner Production investment and the ability of the enterprise to repay the loan over the agreed period. Technical assistance on CP matters is provided to NEFCO by the Lithuanian Cleaner Production Centre.

A similar fund for Polish small and medium enterprises is being developed by the European Bank for Reconstruction and Development.



<http://www.nefco.org/cleanerprod.htm>

There are a number of other financial mechanisms and disbursement structures, including green investment funds, dedicated lines of credit and guarantee funds with special emphasis on CP.

Since 1999, the foundation FUNTEC in Mexico is providing assistance in project preparation as well as loans to micro, small and medium companies implementing CP projects. More than 40 companies received technical assistance. Loans cover up to 80 per cent of a project cost. The financing is directed via the Fund for the Projects for Pollution Prevention (FIPREV).

Special-purpose funds or soft loans are often provided through financial intermediaries in developing countries. Examples of such facilities include World Bank and Kreditanstalt für Wiederaufbau (KfW) credit lines for CP and pollution prevention financing in China, India and some countries in Latin America. The Asian Development Bank is in the process of planning a special SME fund on CP for selected countries in the region.

SLIDE: Possible new areas for CPC involvement

- Multilateral environmental agreements;
- Green investment funds and innovative financing;
- Environmentally sound technology transfer programmes;
- Eco-labelling and certifications;
- Environmental Management Accounting;
- Occupational health and safety.

- ❖ This slide signals some new areas—in addition to the ones already presented earlier in the module—where CP centres can expect to play a greater role in the near future.

Background

An overview of recent policy trends suggests that, in the near future, CP Centres could become increasingly involved in new, non-traditional areas, including:

1. Implementation of international environmental conventions

CP Centres are already involved in projects relating to some multilateral agreements such as the Basel Convention on hazardous waste. In the near future, CP centres may also be involved with the greenhouse gas abatement of the Kyoto Protocol or the reduction of persistent organic pollutants addressed in the Stockholm Convention;

2. Green investment funds and innovative financing schemes for CP

Financial engineering of CP projects is often requested by clients, and development banks and international financing institutions are similarly already showing interest. Some green investment funds have emerged, where shareholders are investing in environmentally beneficial projects. The Swiss Bank Corporation, for instance, offers investments in ecological leaders or innovators who are interested in implementing CP opportunities;

3. Technology transfer projects

Many such projects were fashionable at the beginning of the nineties. Experience showed, however, that technology transfer without the underlying policy work does not bring sustainable benefits. The current definition of “environmentally sound technologies” includes pollution control equipment—a new product for the Centres. For some regions, the clustering of several small countries to create a more attractive market for technology transfer may be an interesting option;

4. Eco-labelling and CP certifications

Following the success of ISO 14001, and lessons learned from the implementation of some eco-label and national environmental certification schemes, it is likely that eco-labelling will soon be back on the agenda in some form. The publication of the ISO 14020-24 standards on eco-labelling will help structure the process;

5. Environmental management accounting

Conventional costing systems used in enterprises have several limitations, inter alia they do not take into account environmental costs and liabilities. Environmental management accounting is a tool of corporate environmental management. It is based on the premises that good environmental management by business and other organizations will become increasingly important; secondly, that accounting and financial management techniques can help to support this, to the mutual benefit of both the organization's environmental management function and its accounting and finance function.



<http://www.eur.nl/fsw/eman/menu.htm>

6. Occupational health and safety

This is an area being promoted by trade and labour unions, because environmental problems are often synonymous with occupational health problems. In addition to its beneficial impact on the workplace, CP helps minimize environmental risks. The International Labour Organization has been increasingly active in promoting preventive environmental management.

SLIDE: Reasons to be optimistic about CP

- Developing regulatory framework and increasing pressure for enforcement; ☹
- Progress in the application of market-based instruments; ☺
- Realistic resource pricing; ☹
- Success of some of the CP Centres; ☺
- Competitiveness and market pressures; ☹
- Increased effort on policy development. ☺

- ❖ This can be the closing slide, by presenting factors that support Cleaner Production. Even though it is included in module 5, the slide can be used to end a meeting on most modules. The closing conclusions of the meeting should be optimistic and constructive, and it is important to agree on follow-up activities.

Background

Despite its obvious economic and environmental benefits, CP has been gaining ground rather slowly. There are, however, some reasons for optimism when considering the future implementation of CP, thanks to existing or emerging “sticks” and “carrots”.

The first “stick” is that environmental regulations are being developed more effectively, in part thanks to international support and the transfer of experience from one country to another. Public pressure to enforce environmental regulations has also been on the increase. This is accompanied by a “carrot” of a growing use of market-based instruments in environmental protection. Economic instruments, based on the polluter-pays principle, are more effective in stimulating implementation of CP projects. Similarly, the pricing of resources becomes more realistic with the general trend towards covering at the very least their production costs (e.g. water and electricity). While there is some debate on how to put a value on environmental costs, the fact is that the increased price of resources is forcing some companies to implement CP cost-saving programmes.

Some CP Centres have achieved a great degree of success in the implementation of CP in industry, in awareness-raising and in developing the policy framework that promotes preventive environmental practices.

The growing liberalization of trade creates a need to ensure economic competitiveness. Market pressures—often exerted by leading companies through the supply chain on their providers—have provided a strong signal to adopt sound environmental management practices and efficiency programmes.

Finally, during the last decade or so, more and more countries have developed effective policies to support CP. Some approaches proved effective, while others failed. Fortunately, there are more and more mechanisms to encourage international exchange of this experience.

ANNEX: Internet resources

Recommended resources on CP policy development available via the Internet, as of January 2002:

Aarhus policy statement on environmental management in enterprises in Central and Eastern Europe and NIS, OECD:

<http://www.oecd.org/env/eap/docs/EMEPolicystatement.pdf>

<http://www.mem.dk/aarhus-conference/issues/business/ececep51.htm>

Pollution prevention solutions during permitting, inspections and enforcement, United States EPA:

<http://www.epa.gov/epaoswer/osw/catalog/titles02.pdf>

(Order No. EPA530-R-98-015)

Policies to promote technologies for cleaner production and products: government guide for self-assessment, OECD:

<http://www.oecd.org/env/docs/gd9521.pdf>

Pollution Prevention and Abatement Handbook, World Bank:

<http://wbIn0018.worldbank.org/essd/essd.nsf/Docs/PPAH>

Strategic Waste Prevention Guide, OECD:

[http://www.olis.oecd.org/olis/2000doc.nsf/LinkTo/env-epoc-ppc\(2000\)5-final](http://www.olis.oecd.org/olis/2000doc.nsf/LinkTo/env-epoc-ppc(2000)5-final)

Government Strategies and Policies for Cleaner Production, UNEP:

<http://www.uneptie.org/Cp2/home.htm>

Implementation Handbook on the Czech National Cleaner Production Programme, Czech CP Centre:

<http://www.cpc.cz/eng/index.htm>

A guidebook of financial tools: paying for sustainable environmental systems:

<http://www.epa.gov/efinpage/guidbkpdf.htm>

UNIDO Cleaner Production Programme:

<http://www.unido.org/CP>

Financing Cleaner Production:

<http://www.financingcp.org/>

Use of economic instruments in environmental protection:

<http://www.rec.org/REC/Programs/SofiaInitiatives/EcoInstruments/sourcebook.html>

Environmental taxes in the European Union:

http://www.europa.eu.int/comm/environment/enveco/env_database/database.htm

Environmentally related taxes database:

<http://www.oecd.org/EN/document/O,,EN-document-471-14-no-1-3016-471,00.html>

Local Agenda 21/local community environmental action programmes:

<http://www.rec.org/REC/Programs/SustainableCities/>

http://www.rec.org/REC/Publications/LEAP_Guide/default.html

Pollution prevention and control and risk management in the European Union:

<http://europa.eu.int/comm/environment/enlarg/handbook/pollution.pdf>

UNEP International Declaration on Cleaner Production:

<http://www.uneptie.org/pc/cp/declaration/>

European Integrated Pollution Prevention and Control Bureau:

<http://eippcb.jrc.es>

European Round Table on Cleaner Production:

<http://www.iiiee.lu.se>

Mexican Round Table on Cleaner Production:

<http://www.cmpl.ipn.mx/MesaRedonda.htm>

Chilean Clean Production Programme:

<http://www.pl.cl/index.html>

Summit of the Americas on Sustainable Development:

<http://www.summit-americas.org/Sustainable%20Dev/susdev.htm>

Colombian Ministry of the Environment:

<http://www.minambiente.gov.co>

United States National Pollution Prevention Round-Table:

<http://www.p2.org>

CP Round Table of the Americas:

<http://esdev.sdc-moses.com/latin/>