10 – Background Material

10 Textbook: Networking at national and regional level within a CP programme

The contents of Volume 10 are based on the findings of an EU research project entitled "Development of Societal Mechanisms and Management for the Establishment, Implementation and Maintenance of Sustainable Production Programmes at the Local Level" carried out within the Fourth Framework Programme. We would like to thank the project leader, Prof. Hans Schnitzer from Graz University of Technology, Austria, as well as the entire project team including partners from Ireland, the Netherlands, Portugal, Italy and Denmark for allowing us to use the findings from the final report as well as from the self-help guide on the start of a regional CP programme.

Please note that Volume 10 is special in the sense that it is not designed for training units with companies but only for the use of those people (such as trainers, consultants or UNIDO representatives) who are responsible for networking within a regional CP programme. Therefore you will not find the same structure as in the other volumes, since it does not include teacher's notes, slides or questions.

10.1 Introduction

In many cities and regions, local initiatives were founded with the purpose of introducing cleaner production programmes. These programmes were started and maintained by different stakeholders, e.g. communities, consultants, chambers and unions, and have been successful to varying degrees.

In order to carry out successful CP programmes at local level it is necessary to systematically evaluate the factors that influence the probability of success, and to set up general guidelines for local communities and other stakeholders to establish, implement and maintain such programmes.

The following chapters contain an evaluation of the experience gained by different stakeholders during the implementation of local activities in various European countries. They focus in particular on the segregation of general success factors from specific, local and cultural influences.

Factors contributing to success or failure of earlier CP programmes were considered in order to establish general rules which can be applied and transferred to other countries and situations. Therefore a set of tools for analysing the socio-economic and cultural context of cities and regions has to be developed.

A further goal was to find new forms of cooperation and networking between social and economic stakeholders as well as among production units of a community's network. These networks are considered necessary prerequisites for sustainable development.
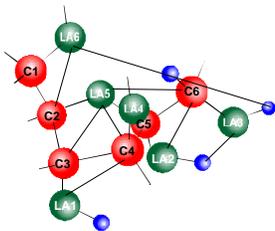
10.2 Reasons for initiating a CP programme and possible stakeholders

This chapter provides an overview of the reasons for implementing a CP programme and possible stakeholders.

10.2.1 Reasons

The overriding reason at first glance is to reduce pollution. Of course this is an insufficient ambition. Simple filters and other end-of-pipe technologies may claim the same outcome. In simple terms the real reason may be expressed as the necessity to reduce the quantity and intensity of material and energy throughput in our society. This involves issues on both the demand and supply side and implicitly includes social issues. One aspect of the process is production and therefore the necessity for cleaner and sustainable production is obvious. Research on this topic has led to the conclusion that appropriate measures are best implemented at local level. Sustainable production can thus be seen as a subset of sustainable development although improvements on the supply side are insufficient by themselves.

10.2.2 Goals

The goal is to move towards more sustainable production. In this respect it is clear that a series of disparate activities cannot, by themselves, lead to sustainable production. Nevertheless such activities are necessary to create a climate where other initiatives can thrive. Therefore an external culture has to be developed within which companies, authorities and other stakeholders may be more easily influenced. Thus, although cleaner production programmes may offer the best chance of success, individual activities and process steps are important.

10.2.3 Stakeholders

There may be many stakeholders but some are of critical importance. Analysis and experimentation has identified key stakeholders and possible additional important stakeholders. The main stakeholders are outlined below.

10.2.3.1   Companies

Companies are fundamental to the improvement process because they need to reduce their material and energy consumption. It is important to involve them proactively.

10.2.3.2   Authorities

Authorities interact with companies in a variety of ways, consequently it is essential that not only environmental departments (regulators) interface with companies. To increase the potential multiplier effect, all staff working for authorities should be included, and authorities should be provided with additional resources.

The degree and type of involvement of authorities in a region depends on the social and cultural conditions and available resources. At the beginning of a CP project the role the authorities play in a specific country has to be evaluated. The worksheets for the assessment of stakeholders can be used for this purpose.

Examples of the involvement of authorities are:

- Training of authorities;
- Involvement in the formulation of individual projects;
- Support in identifying and motivating companies;
- Initiation of trainings;
- Funding;
- Advertising of programmes;

10.2.3.3   Champions

Champions are perhaps the most important stakeholders. They are people who can animate and drive the whole process. It seems that every successful CP initiative was driven by particular people. Champions take two forms: either internal (in companies or authorities) or external. External champions exist in most countries. Therefore it is important to increase their influence and find more champions. Internal champions are already active in the field of CP or can be trained. Mechanisms for locating and training such champions are therefore important.

Each of the participating expert organizations of the NCPCs can also act as a champion. Internal champions can often be located and trained within the authorities during a CP project. In addition, networking and international contacts established at UNIDO meetings or within UNIDO networks with other NCPCs can boost the performance of different stakeholders.

10.2.3.4   Experts

There is a real demand for experts. Although previous demonstration projects have indicated that the "parachuting-in" of experts does not ensure continuity, it should be noted that the quality of results achieved without them is not that high. Therefore it is obvious that more experts need to be trained in regions, companies and within authorities. Very often the external consultants provide the majority of the expertise which is essential for success. Nevertheless, the possibility for a small number of external experts to establish relations with a large number of companies is limited.

It was observed that more companies participated in CP programmes where not only experts or consultants, but also the authorities were involved, and that more companies initiated their own improvement programmes. Nevertheless, most of them still had to be assisted externally.

An interesting outcome of the above mentioned EU research project STENUM-1 was the lack of expertise that the regulators perceived in themselves. In all the participating regions authorities felt safer turning to other bodies for expert advice.

10.2.3.5   Other stakeholders

Although the stakeholders mentioned above are considered essential to the process, it is necessary to include additional stakeholders. The participation of chambers of commerce, labour organizations and NGOs, for instance, might foster a greater emphasis on societal change (new orientation), rather than simple reliance on better production regimes.

To date the involvement of such stakeholders has been limited. In the cities of Graz and Cork, the local Chambers of Commerce merely acted as facilitators rather than being actively involved. This is not necessarily a small contribution as it constitutes a first step towards integrating them in the process. But it is obvious that more internal champions need to be identified and trained within such organizations. The involvement of NGOs has not been fully explored. There is a certain reluctance both within companies and the authorities to get too closely involved with NGOs. This is another area where awareness has to be raised.

10.2.4 Instruments

Within the EU project, a portfolio analysis was used to assess current and desired positions in each region. It concentrated on the relationship between available instruments and possibilities of communication, and was based on four potential scenarios for interaction between stakeholders. These are designated "Laissez-faire", "Command", "Convince" and "Negotiate". Unless we understand the opportunities for communication and the most relevant types of communication, we have little chance to decide which tools are necessary.

An analysis of available and potential instruments permits the categorization into three generic types. These are:

1. Legislation-based instruments;

2. Incentive-based instruments;

3. Education-based instruments.

An array of additional potential instruments exists. The following are considered to be the most important:

1. Legislative instruments

Legislation is the most important instrument, closely followed by regulation. The theory of the free market appears to become prevalent, but there is little doubt that innovative legislation and regulation can guide companies (and authorities) in the right direction. In very simple terms this may be outlined as follows: Force companies to act, provide appropriate training for them and the authorities, supply educational materials, and simultaneously create a culture to facilitate their activities.

Legislation alone is of course not enough, but the other instruments outlined below can only be successful if they build on a strong legislative foundation.

2. Financial instruments

These instruments are incentive-based. Financial instruments include taxation instruments (both as incentive and disincentive) as well as other cost-based measures (increasing landfill charges, etc.). While all these measures are important and can have an effect on the performance of companies, the findings of the STENUM-1 research are based on the simple principle that money has to be provided in order to finance proactive activities.

Basically all cleaner production programmes depend on money. In order to set up a successful programme, adequate resources must be available. So far however, no attempt has been made to suggest mechanisms for the provision of such resources. In principle, resources can be equated to money. It may cost as much as EUR 10,000 per company to set up appropriate activities. In regions with fewer resources and with less developed CP culture, companies may expect grant aid for their participation in projects. In more "open-minded" systems the requirement is less obvious but innovative training of regulators may be impossible without sufficient funding by grants.

At the moment, most financial resources are provided by authorities (local or national). Therefore it is essential to try to set up a structure for the allocation of alternative (or at least supplementary) resources. The overall goal could be a programme where companies are for example willing to pay, and other stakeholders contribute other resources (training, etc.).

3. Instruments for changing the attitudes of authorities

These instruments depend to a large extent on national culture and legislation. Increasing demand from a legislative point of view can have both positive and negative impacts. The frequency of licensing in accordance with the IPPC Directive in both the Netherlands and Ireland illustrates that the authorities in these countries are more willing to enter into dialogue with companies. Companies, on the other hand, can demonstrate their readiness to take responsibility by setting up voluntary improvement plans.

Regulators have to be trained in different communication skills but primarily they must become aware of the necessity of these measures .

Of course, financial considerations come in here as well. Authorities have to be pushed harder. This requires champions and patience. Therefore the appropriate training (capacity building) must be provided to create internal experts within the authorities.

Appropriate instruments include incentives and training for authorities as well as instruments designed to raise their interest in the first place. Therefore the first objective should not be the regulator or environmental department, but the general management of the authority. Authorities will always claim that they lack adequate resources or advance competing priorities but these are some of the very same barriers which experts have encountered in companies during the past decade.

The necessity for champions has already been outlined above. Similarly, it is obvious that experts are required to promote the CP idea. Companies as well as authorities and regulators should have access to a pool of expertise.

10.2.5 Influences on CP programmes

10.2.5.1   Legislation

Legislation is a key factor for the successful implementation of a cleaner production project. Legislation, however, does not apply consistently to all companies within a country. The division into sector or size-specific laws and regulations has a major influence on the implementation of CP. The IPPC Directive of the EU for instance addresses mainly large companies with many employees and high resource consumption. On the other hand it is a fact that most European companies are SMEs and thereby not covered by this approach, although national laws and regulations may extend the scope of the directive.

In addition not only legislation but also its enforcement by the authorities is important. In order to describe and compare how legislation can influence the implementation of CP the following questions have to be answered for different regions or cities:

- Does the law support cleaner production (yes/no/complex)?

- Are the laws oriented towards specific sectors and/or company sizes?

- Do authorities use a covenant approach?

- What is the role of the government?

- Are environmental considerations integrated into existing policies and legislation?

- What form does the administrative structure take?

- Does the public have access to environmental information?

- What are the public requirements in this field?

- What are the requirements for licensing?

The country-specific situation has to be evaluated in view of these questions.

10.2.5.2   Socio-economic factors

The success of a CP programme depends to a large extent on the socio-economic structure of the community, region or country under consideration. The following aspects have to be analysed in each community, region or country at the beginning of a CP project. The important socio-economic aspects can thus be assessed and used for designing appropriate CP strategies.
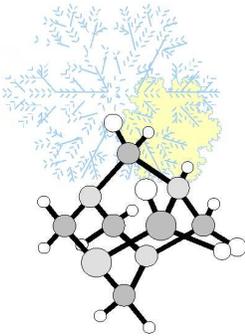
Economic structure

- Sector distribution;

- Distribution of company size;

- Economic performance of a community, region or country;

- Sector relevance (economic as well as environmental).

As shown by the analysis of previous CP programmes, the design of CP depends strongly on these factors. For instance, only a few strategies are suitable for small and micro-enterprises (less than 10 employees) although they represent the majority in the European economy. Obviously these companies require a different approach because of limited resources (personnel as well as financial) and emission volumes. Emission volumes may seem irrelevant when considered separately for each company. Their sum however is highly significant.

Educational structure

The authors assume that highly educated and motivated employees in industry and trade contribute to successful CP programmes. An educational structure with high-quality institutions is considered to be an important starting point for the successful implementation of cleaner production.

Political situation

Although publications state that the management of environmental problems cannot be confined to single groups (for example politicians), it is also obvious that political parties play an important role among the various stakeholders involved in the change process. The theory of social diffusion of innovation and other relevant research results describes how new ideas and products are disseminated in human systems. A crucial part is played by opinion leaders and role models within existing social networks.

As political parties are (or at least should be) opinion leaders and in this function contribute to the legislative system of communities they have to be involved in appropriate ways.
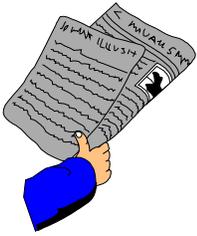
Influence of local groups and media

The process of change is influenced by a number of stakeholders. In particular local groups, e.g. environmental groups, and the media can play an important role. The media in their function as opinion leaders (by impartial reporting) can largely contribute to the success or failure of a CP project. Therefore it is essential to analyse the structure within the considered region carefully in order to plan the appropriate activities.

10.2.5.3   Culture

As mentioned before, it is necessary to involve different local stakeholders in CP. Therefore some fundamental cultural factors have to be evaluated in order to choose:

- The appropriate stakeholders;
- The appropriate moment of involvement; and of course
- Their degree of involvement.

The analysis of various projects in Western Europe compared to Eastern European countries has shown that cultural differences can and definitely will influence the performance of CP. This holds true even more so at international level.

In order to design appropriate strategies individual descriptions of the situation in the cities, regions or countries where the case study is carried out should include:

- The level of stakeholder involvement (the culture of negotiation and compromise);
- The level of awareness in companies and governments;
- Public and consumer awareness;
- The communication tradition.

Obviously different answers to these questions require different approaches towards cleaner production in order to benefit from the actual situation.

10.2.5.4   Environmental situation

The prevailing environmental situation has a major influence on the implementation of CP. Environmental problems can be influenced by different factors. Therefore environmental problems have to be analysed in detail to build a solid basis for the development of CP strategies. The environmental factors themselves can be divided into several subcategories.

10.2.5.5 Global environmental problems

Only after the publication of the report "Beyond the Limits" by the Club of Rome (Meadows 1992) have people all over the world become aware of global environmental problems. As these global problems have to be solved through measures at local level (which does not mean that these activities should not be part of a global strategy), their impact has to be considered.

10.2.5.6 Local environmental problems

It is a fact that sometimes environmental pressure (i.e. serious environmental problems) is necessary to motivate people to implement cleaner production measures.

10.2.5.7 Environmental problems at the sector and company level

It is not only the overall environmental situation in a community, region or country that is relevant, but also the environmental impacts caused by individual companies to neighbours. The latter can initiate activities that lead sometimes to regional or sector-specific concepts, e.g. problems of the textile industry in the late eighties and early nineties.

The profound analysis of the environmental situation in combination with the assessment of the environmental relevance of different economic sectors in an area is a helpful and necessary tool for the implementation of CP programmes at local level.

10.3 Methods of starting a local or regional CP programme

If a company has committed itself to initiating a cleaner production programme, it is important to work out in detail what the management and staff expect from this activity in order to have a firm basis for discussion with stakeholders who still have to be convinced.

In order to carry out a successful project you need the support of various groups and persons who may not be informed about cleaner production, sustainable development or local networks. Some of them might see problems or even be against such activities, but you need as much support as possible.

Most people will support your activities as soon as they can visualise advantages for themselves, but every party will define "success" or "advantages" in a different way. It is very important to plan a cleaner production programme in such a way that all partners achieve what they refer to as success.

10.3.1 Environmental situation at the start of the programme

There are several parameters that help to describe the current situation of the companies and region at the beginning of a cleaner production programme. Since it is difficult, and in general not necessary, to carry out this description in words, we have chosen symbols to describe the starting point.

Please refer to Worksheet 1-7 "Our environmental situation". It includes some items you should try to quantify whereas others can be added by the different stakeholders.

10.3.2 Involve more stakeholders

A local or regional cleaner production programme is always a multidisciplinary approach that requires the co-operation of various stakeholders. Further to this, it is a socio-economic project in the sense that it influences the society and economy.

In the following sections we describe various stakeholders who should be considered for inclusion in the programme. They play different roles and you will need different arguments to convince them.

It is not necessary to approach all the stakeholders but you should think about the possibility and the advantages of involving them. On the other hand you might want to include other stakeholders in a project in your region or country that are not listed. Write down their names and work with them.

Another important question is the time at which the chosen stakeholders should be involved. Please consider that some might be key stakeholders and some may be useful for later involvement.

We will now briefly describe some stakeholders. Please consider your situation and rate them according to their importance using Worksheet 10-1.

The local government: It might provide financial support, motivate companies through its political power and through the licensing process. It could be important for the continuation of the programme.

The companies: They are obviously the most important partners. A cleaner production programme without companies is impossible. They might also have to contribute financial resources.

Consultants and researchers: They are the people who do most of the work. They have financial and personal interests in the programme and its continuation. Their innovation potential is important.

Politicians: They should be interested in economic development and a clean environment. In many cases their support is necessary to obtain public funding, but they are also interested in good publicity and an opportunity to meet people.

Chambers of commerce/Confederations of industries: Many companies receive most of their information through their respective chambers of commerce or confederations of industries. These institutions might also provide money for the project or help to raise funds. They can also sometimes influence national laws and regulations.

Trade unions and labour organizations: Their role is similar to that of the chambers of commerce and confederations of industries. They can be of great assistance, but their involvement can also include certain risks.

NGOs: Non-governmental organizations, environmental groups for instance, might be sceptical of your activities. In cases where they support them, it might possibly lead to problems with the companies.

Media: Success stories about a cleaner production programme have to be presented to the public. Newspapers and TV can help to attract companies or obtain political support.

Think about and describe some more stakeholders who might be important in your country!

10.3.3 Position of the stakeholders – Portfolio analysis

As a result of the above mentioned categories and the data collected in Worksheet 10-1 you have pre-selected and roughly prioritized the various stakeholders. How these stakeholders can be motivated and successfully involved in the project is described below.

First of all the current positions of the chosen stakeholders have to be determined in order to find the appropriate strategy for convincing them to join the programme. For this purpose a portfolio analysis is a very helpful tool.

The vertical axis represents the instruments (external factors) which can be used by the various stakeholders involved in CP and the horizontal axis indicates the communicative capacities (internal factors) of the stakeholder under consideration.
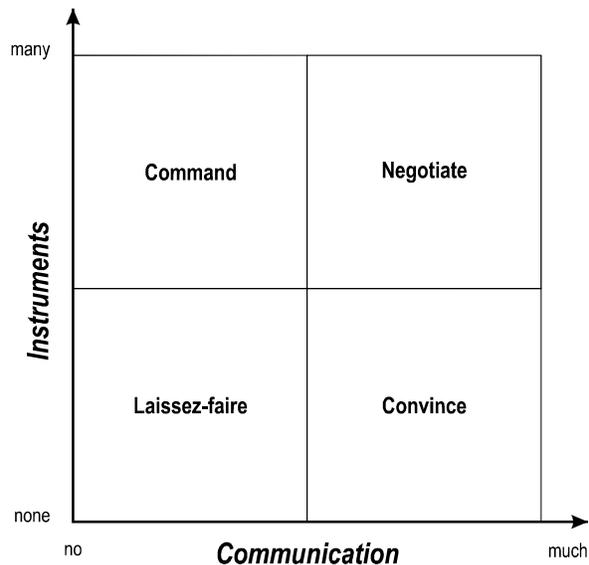

Figure 1: Portfolio of stakeholders

Based on the results obtained, the following four positions can be defined:

Laissez-faire: The stakeholder has only few instruments and limited communication skills. His only possible role is to leave things to others and do nothing.

Convince: Few instruments available, but highly developed communication skills. In this case, companies are convinced about CP and other approaches by the power of argument.

Command: In this case, the stakeholder can force others into action due to his strong position. For CP activities however, this has not proven to be a successful approach.

Negotiate: In this pattern, the primary approach is to negotiate with other stakeholders to achieve results. Negotiating skills are the decisive factor.

You can find this portfolio analysis also in Worksheets 10-2 and 10-3 with an example each on local authorities and companies.

Example:

Let us briefly describe the portfolio analysis for local governments, who are responsible for the enforcement of environmental laws and regulations and who increasingly focus on cleaner production and related approaches. Their role towards the industry has considerably changed moving away from "Command" (although a certain amount of command elements will always be required) and emphasizing cooperation, co-production and support. Implementing and sustaining local CP programmes is an important part of this change.

Both market parties and governments agree that new approaches are necessary which take into account the interests of all stakeholders. Companies, however, will generally only cooperate voluntarily if they can discern at least a long-term perspective of direct profit or other advantages in the approach.

In order to describe the current position of a local government and the possibilities for change, the different positions in the relations between the local government and the companies can be described in a portfolio on the basis of two main variables:

- Instrumental possibilities of the local government; regulatory, economic and market oriented instruments. This is directly related to the three main CP "driving forces".
- Communicative capacity of the local government. This involves the view of the local government on cooperation, the culture within the government, and the competences available within the organization.

A local government can have from none to many instruments available and from little to high communicative capacities. This leads to a portfolio matrix where four basic types of patterns emerge, in which the local government and every other stakeholder can position themselves (implicitly or explicitly). These can be described as follows:

Laissez-faire

The local government has only few instruments and reduced communicative capacities. Its only possible role is to leave things to others and to do nothing.

Convince

Few instruments available, but high communicative capacities. In this case, the companies have to be convinced about CP and other approaches by the power of argument.

Command

In this case, the local government can force companies into action from a strong legislative position. For CP activities however, this has not proven to be a successful approach.

Negotiate

The primary approach is to negotiate with companies to achieve results. Negotiating skills are the decisive factor.

Each of the patterns corresponds to a steering mechanism in the region or community:

 Laissez-faire: Autonomous development;

 Convince: Steering within networks;

 Command: Hierarchical steering;

 Negotiate: Steering of the negotiation process.

10.3.3.1 Positioning and changing of roles

The key function of the model is to increase the authorities' awareness of their actual position and the use of existing instruments. Furthermore, the model can be used to understand the process of change which is intended or necessary in different cities. Starting from the analysis of the current situation and the strengths and weaknesses of the given position regarding the implementation of CP activities, a process can be described to change the patterns and roles.

In theory, the processes of change from all cells of the matrix to all other cells can be described. In order to sustain CP however, only a few changes are recommended or feasible for local governments; in general those which move towards the right and the top of the portfolio.
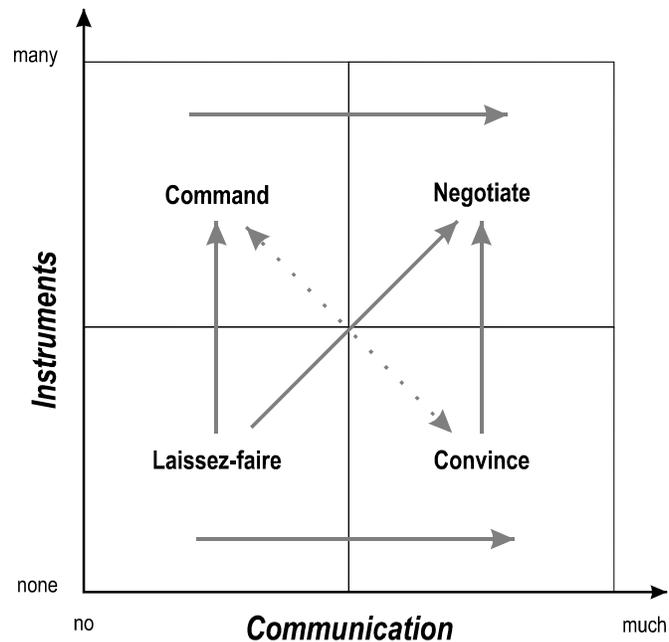

Figure 2: Portfolio – changing of roles

To move from "Laissez-faire" to "Convince" and from "Command" to "Negotiate" the communicative capacity has to be enhanced. To move from "Laissez-faire" to "Command" and from "Convince" to "Negotiate" it is necessary to focus on strengthening the instruments. Part of this is outside the scope of local government, but part of it can be improved locally by improving effectiveness, using instruments such as awards, peer group pressure and enforcement among other ways.

The transition from "Laissez-faire" to "Negotiate" is difficult to achieve in one step and a phased process has to be defined. A movement in the direction of the dotted arrows is also possible; for instance progressing from "Command" to "Convince", if existing (regulatory) instruments are weakened and if the communicative capacity is enhanced at the same time. The answer to the question of which type of transition is most desirable depends on the particular local situation and possibilities.

It has to be stated that the portfolio itself cannot be used to apply and implement a process of change because local networks are too complex and the introduction of new instruments is too intricate. The portfolio, however, is a useful instrument to provide a theoretical framework and increase awareness.

10.3.4 Selection of tools and directing strategies

You have already decided where you want your stakeholders to move according to the following example:

From Laissez-faire (LF) to Command and Control (C&C)
$$= LF \rightarrow C\&C$$

From Laissez-faire to Convince
$$= LF \rightarrow C$$

From Laissez-faire to Negotiate
$$= LF \rightarrow N$$

From Command and Control to Convince
$$= C\&C \rightarrow C$$

From Command and Control to Negotiate
$$= C\&C \rightarrow N$$

From Convince to Negotiate
$$= C \rightarrow N$$

Of course there are also some further possibilities, nevertheless with respect to sustainable development at local level, we consider the directions listed above to be essential. Obviously the implementation of the various tools does not only depend on the stakeholder but also on the local circumstances. The socio-economic conditions as well as additional external and internal factors influence the performance of regional cleaner production programmes.

Due to the fact that companies are key stakeholders in a cleaner production programme, the tools for companies are numerous whereas there are fewer tools for other stakeholders.

One key-finding of the research project mentioned in the introduction was that CP work must focus on education. Therefore education and training are included in all proposed measures. Nevertheless education and other tools have to be tailored to a particular stakeholder in order to achieve the desired results.
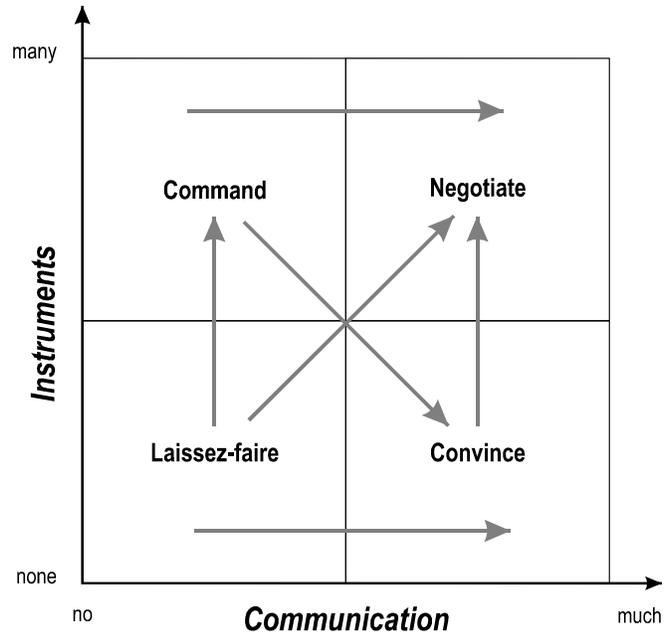

Figure 3: Portfolio – Changing of roles

Besides the selection of various strategies and tools, the following pages provide an overview on the tools which should be applied in order to motivate a stakeholder to take a certain course of action. For the implementation of this method please use Worksheet 10-4 Approaching the stakeholder "local authority" and Worksheet 10-5 Approaching the stakeholder "company".

10.4 Tools

The success of cleaner production (CP) and pollution prevention (P2) has been manifested in numerous case studies, CP/P2 options and thousands of tonnes of reduced emissions and saved raw materials. Nevertheless all CP programmes have had to face barriers which blocked and are still blocking self-sustainability, and the continuous improvement of activities towards sustainable development.

Such barriers include:

- Fear of failure and the lack of guaranteed results;
- Resource constraints (time, staff, finances and materials);
- Lack of awareness;
- Lack of coordination and planning;
- Lack of incentives.

In order to overcome these barriers, various tools have been developed and/or are still to be developed. This chapter deals with the tools that have been successfully applied in various projects and which could induce the targeted processes of change.

This list of tools is not exhaustive, and the tools are not described in great detail. A short introduction is provided covering the following issues:

- Idea behind the tool;
- Dependence on local socio-cultural conditions;
- Factors for transferability.

The different tools are divided into three groups:

- Legislation-based tools;
- Incentive-based tools;
- Education-based tools.

This division might be a matter for discussion as some tools can be shifted from one group to the other or are applicable to several groups. Nevertheless the structure provided is appropriate to work with.

10.4.1 Legislation-based tools

Emission limit values (ELVs)

Description:

Strict emission limit values in combination with flexible regulations in the licensing process could increase the acceptance of sustainable production.

Factors for transferability:

- Commitment to sustainable production;
- Flexible authorities;
- Appropriate distribution of responsibilities;
- Appropriate incentives to motivate companies;
- Availability of information.

IPPC licensing

Description:

The Council Directive 96/61/EC lays down the requirements for legislation in order to introduce Integrated Pollution Prevention and Control (IPPC) licensing in the member states. Unlike the previously valid single-media legislation, IPPC licensing is a multi-media approach. This directive provides a framework for certain important instruments such as:

1. Prevention
2. Reporting
3. Emission limit values
4. Best available technology
5. Access to information by the public
6. Description of activities, materials, emissions and prevention measures proposed
7. Derogations.

In conformance with the Council Directive, the national legislation has to ensure that companies move towards sustainable production on a large scale.

Factors for transferability:

- Focus not only on ELV;
- Flexible attitude of authorities;
- Appropriate distribution of responsibilities;
- Politicians have to be convinced about the CP approach.

Preferential treatment

Description:

Companies with positive results are accorded a preferential treatment and their ECO-audits and ECO-management can be used as monitoring instruments without increasing the burden through legislation. Companies with standard results have to comply with industry and sector-specific rules which are monitored in the usual way. Companies with a negative outcome have to fulfil special rules and conditions, and are intensively monitored.

Factors for transferability:

- Appropriate regulatory system;
- Appropriate distribution of responsibilities;
- Qualification of authoritative personnel in the offices;
- Commitment of politicians.

Facility inspections

Description:

Facility inspections check compliance with existing environmental standards. The inspection is carried out by the responsible authority and should include incentives and/or additional information to increase the acceptance of sustainable production.

Factors for transferability:

- Appropriate regulatory system;
- Appropriate assignment of responsibilities;
- Atmosphere of trust between the authority and company;
- Appropriate mediators for the information transfer;
- Sufficient resources for the authorities;
- Qualifications of authoritative personnel in the offices;
- Commitment of politicians;
- Economic structure (works best with medium-sized and large enterprises).

Eco-labels

Description:

Eco-labels can be used as an award for products which are produced under less harmful conditions (reduced source consumption, less or no toxic materials, longer lifetime, etc.). The most efficient way is to include this labelling in national or regional regulations.

Factors for transferability:

- Consumer pressure;
- Availability of information;
- Awareness of the public and companies;
- Awareness of environmental impacts;
- Adequate resources (staff and information) of the authorities;
- Economic structure (support for SMEs).

Product legislation

Description:

This idea covers the aspects of legislation on product return, material taxes, product taxes and product fees. All these strategies are suitable for motivating companies to consume fewer resources and to use fewer or no toxic materials.

Factors for transferability:

- Appropriate regulatory systems;
- Availability of information;
- Level of awareness in companies;
- Consumer pressure;
- Economic structure (global/local context).

Tradable permits

Description:

Market-based economic instruments applied by national, regional or local authorities can be used to achieve environmental objectives by means of free market principles. Tradable permits, emission fees, etc. could motivate companies to reduce resource consumption and create new business opportunities.

Factors for transferability:

- Appropriate regulatory system;
- Commitment at political level;
- Local environmental situation;
- Applicability to a range of pollutants is rather limited;
- Expensive administration;
- Level of awareness/information in companies;
- Information infrastructure.

10.4.2 Incentive-based tools

Leadership and mentoring

Description:

Leadership: Governments usually encourage the economy to apply CP. They foster the development of relationships between large, environmentally friendly facilities and smaller facilities through knowledge transfer.

Mentoring is a form of partnership which is defined as the transfer of expertise from one company to another in order to enhance the environmental performance of the latter.

Factors for transferability:

- Need for incentives;
- Availability of resources (staff, time and financial);
- Good communication skills;
- Atmosphere of trust;
- Image aspects.

Cooperative industry partnerships

Description:

Unlike leadership and mentoring, the main idea of **cooperative industry partnership** is to provide practical help to companies through government agencies, NGOs or interest groups. This assistance covers information on the comparative risk, performance and costs of alternatives to ensure environmentally-sound products, processes and technologies.

Factors for transferability:

- Availability of technical information;
- Atmosphere of trust between different stakeholders;
- Structure of education and training centres;
- Structure of responsibilities especially in the case of local authorities;
- Recognition scheme;
- Level of awareness of CP.

State and local government partnerships

Description:

This approach should be used at all levels from high-level government (national) to lower-level government (local/regional) and its agencies. The concept includes the establishment of partnerships between government agencies and other stakeholders to provide support in building capacities at local level, in order to understand the impact of pollution and the benefits of CP.

Factors for transferability:

- Common interest of policy makers in CP;
- Resources (staff and financial);
- Credibility of efforts;
- Collaborative efforts in line with legal compliance;
- Acceptance of the agency or another stakeholder as a partner.

Reporting

Description:

Voluntary or forced reporting of environmental issues by companies to the government and/or public could be used for several purposes, for example:

- Cross checking facilities for compliance;
- Developing regional or national regulatory programmes;
- Identification of locations for detailed risk assessments;
- Targeting technical and training assistance.

Factors for transferability:

- Legislative power;
- Incentives (financial and image);
- Atmosphere of trust (confidentiality of certain data);
- Public awareness.

Financial support

Description:

Financial support to CP programmes can be granted in various ways (subsidies, debt programmes, equity programmes, tax incentives, access to capital, etc.). Another indirect financial support could be purchasing specifications which favour environmentally friendly products. In addition a distinction has to be made between private and governmental support.

Factors for applicability:

- Financial resources;
- Clear criteria and monitoring;
- International context (e.g. free trade areas);
- Legal aspects;
- Acceptance by companies;
- Economic structure;
- Non-traditional sources of capital.

Labour-based initiatives

Description:

This approach could be used to improve environmental, health and safety conditions and at the same time to increase productivity in companies. The use of labour-based initiatives in combination with other tools can be regarded as a bottom-up approach for fostering CP in the economy.

Factors for transferability:

- Level of awareness of employees;
- Economic situation (companies struggling for survival usually refuse to implement new environmental strategies);
- Economic structure (functions better in MLEs with organized workers);
- Financial support;
- Guiding organization;
- Environment for worker participation in companies;
- Technical resources;
- Financial resources.

Pollution Prevention (P2)

Description:

The main idea of this approach is to raise the awareness of the public and companies. It aims at increasing awareness and support by local governments in order to ensure the continuity, expansion and development of CP programmes.

The activities include:

- P2 workshops (e.g. on specific items or general topics);
- Company visits;
- Award programmes;
- Special training sessions;
- P2 videos on local TV;
- Mailings on P2 to companies and households;
- P2 articles in newspapers;
- Presentations in schools.

Factors for transferability:

- Public awareness;
- Environmental situation;
- Resources (staff and financial) of local authorities;
- Availability of information;
- Media awareness;
- Willingness to share experiences.

Awards

Description:

Awards could either be presented for *Environmental excellence* or for *Proven efforts towards better environmental performance*. Some of the eligibility criteria for an award could be:

- Identification and reduction of sources of pollution;
- Consistent application of environmental management practices;
- Promotion of public awareness for CP programmes;
- Innovative approaches;
- Voluntary acceptance of standards beyond legal requirements;
- Long-term commitment e.g. environmental policy;
- Communication of environmental information to the public.

Factors for transferability:

- Public awareness;
- Public acceptance;
- Public pressure;
- Business interest in improved image;
- Financial grants;
- Financial benefits (indirect);
- Legal framework (preferences in purchasing activities by public authorities).

10.4.3 Education-based tools

Education and training

Description:

Education and training for the different local stakeholders should cover both technical and non-technical aspects (economics, sociology, human behaviour as well as management strategies). The various training programmes have to be adjusted to the specific needs of the target groups (stakeholders).

Obviously there are many different types of training for the various stakeholders. In the following some examples are provided.

- Training of company environmental managers in CP techniques and methods;
- Training of company managers on environmental policy and management;
- Training of workers on CP principles and/or health and safety aspects to foster bottom-up approaches;
- Training at vocational schools to foster bottom-up approaches;

- Training of CP consultants;
- Training of local/regional authorities in CP techniques and innovative approaches;
- Training at universities and technical colleges to ensure future implementation;
- Adult (professional) training by various stakeholders (labour organizations or industrial associations) in order to increase awareness.

Factors for transferability:

- Appropriate training institutions (educational structure);
- Atmosphere of trust;
- Acceptance of adult/post-graduate training;
- Human behavioural trends;
- Financial aspects;
- Resources (time and staff).

10.5 Recommendations and conclusions

As outlined previously, the successful establishment of a CP programme requires adequate resources. The origin of such resources remains open to debate but the ideal solution is that companies finance the programme themselves because they are aware of the resulting benefits and advantages. Nevertheless, authorities also have to contribute to a CP programme, their input being analogous to the provision of seed capital by investors with the aim of achieving an ultimate profit. The analogy can be extended to include the parameters by which a potential investment might be assessed. This raises the question of who is responsible for the definition of the corresponding guidelines or parameters and who is responsible for their implementation. Regions that start from a lower level of communicative culture need a methodology in order to fully engage the authorities.

Whichever approach is finally chosen, it is clear that adequate resources must be available. The sourcing of such funds is an important issue. To date the main contributors have been local, national or foreign governments as well as international organizations such as UNIDO or the EU. It is necessary to enlarge this platform by increasing the saleability of the product. As a consequence the range of tools (communicative or others) for those interacting with companies must be enhanced.

Once the problem of adequate resources has been solved, education appears to be the dominant element. This can take the form of training for company staff or equally the building of new capacities within authorities. In any event it is clear that all important stakeholders need additional skills. In this respect it is a considerable success that authorities established relations with international partners such as UNEP or UNIDO and participated in projects. In certain regions, depending on the prevailing tradition, a complex networking structure has to be set up. Once again education is a key factor.

Appropriate legislation is a primary prerequisite for CP programmes. It should be based on the IPPC concept although flexibility in its enforcement is also an important issue.

Culture, history and the socio-economic situation determine the speed of transition and impact of a CP programme. Significant stakeholders and tools are easy to identify: The main stakeholders are companies, authorities and experts, while the principal tools are education and legislation.

Cleaner production requires adequate resources. Governments and companies, however, seem not to have fully realized this fact. The sourcing of such funds is a priority. By and large, authorities have the greatest potential for proactive interaction with companies. Thus, considerable resources need to be devoted to altering their perception and re-training the local authorities' staff.

No matter which of the situations highlighted applies, and no matter which model is used, the most important instrument is education. It can take many forms and depends to a large extent on the prevailing situation. It includes the training of authorities, companies and experts alike and may be formal or informal. It involves the acquisition of new skills, such as marketing and communication, as well as traditional training in CP methods. Moreover it includes awareness raising through the dissemination of information and programmes for setting up networks. Whichever individual model is applied, it is clear that any solution must primarily focus on education.