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Final Report

Counterpart Institutional Arrangement

between

Zimbabwe National Cleaner Production Centre (NCPC)

and

Erasmus Centre for Environmental Studies (ECES)

Erasmus University Rotterdam

1/7/1996 - 31/12/1998

Rotterdam, 31 December 1998

UNIDO Contract No. 96/133 Project No.: US/INT/92/044 Activity Code: 0750CB

## 1. Introduction

UNIDO Environment and Energy Branch and UNEP Industry & Environment initiated the establishment of a National Cleaner Production Centre (NCPC) in Zimbabwe, starting in 1995. In addition to continuing Cleaner Production assessments in companies with assistance of IVAM Environmental Research B.V., the Erasmus Centre for Environmental Studies was involved in Cleaner Production Policy workshops and Cleaner Production awareness raising activities for university education in the period 1/7/96 – 31/12/98.

## 2. Workplan and Brief Performance

In the first year of activity (1995), the Zimbabwe NCPC has put emphasis on:

- \* The initiation of an operational NCPC;
- \* Practical demonstration of the Cleaner Production approach.

In March 1996, a high-level Cleaner Production policy workshop was performed by IVAM and ECES in Harare. As follow-up in the dissemination of Cleaner Production, the Erasmus Centre for Environmental Studies assisted the NCPC in the initiative for a Cleaner Production-infra-structure by the organisation of the following activities:

- 2.1 Regional Cleaner Production Policy workshops
- 2.2 Cleaner Production education materials
- 2.3 High-level Cleaner Production Industrial policy workshop
- 2.4 Total Cost/Benefit Accounting workshop
- 2.5 Information and interview meetings for the stakeholder approach and networking on the dissemination of the Cleaner Production concepts

### 2.1 Regional Cleaner Production Policy workshops

Awareness training programmes for governmental officials at the regional and municipal level were organised in Bulawayo (July 22 - 23, 1996), Gweru (July 25 - 26, 1996) and Harare (July 29 - 30, 1996).

The 2-days regional workshops focused on the participation of regional governmental participants, responsible for environment and economics, and representatives from a regional industrial organisation. The design of the workshops was based on:

- a) the introduction of Cleaner Production concepts;
- b) the presentation of the regional situation and environmental problems; the effectiveness of a change in perception from Pollution Control towards Cleaner Production;
- d) the design of a 'Cleaner Regions' programme as a stakeholders approach.

The learning about "what participants can do in their position and organisation" was stressed, together with the possibility of assistance and co-operation of the NCPC.

Thirty four participants with a governmental background and six participants with an industry association and Chamber of Commerce background joined the three workshops.

Figure 1 Overview of number of participants in regional Cleaner Production policy workshops

Place Workshop	Regional background of governmental participants	Background of non governmental participants	Total number of participants
Bulawayo	Bulawayo Hwange Victoria Falls	EFZ CPC	15
Gweru	Gweru Kwekwe Masvingo Zvishavane	Reg. Industry Ass. CPC	12
Harare	Chingoyi Chitungwiza Harare Marondera Mutare Norton Ruwa	Urban Council Ass. UNIDO CPC	14

In these workshops governmental officials stressed the important position of councillors in the regions. When the officials do not find recognition at the councillors level, not much can be done. The councillors became involved in Cleaner Production dissemination policy workshops in the regions of Bulawayo (26 June 1997) and Harare (30 June 1997). The 1-day regional workshops focused on the participation of regional and municipal councillors, responsible for environmental and economical topics.

The design of the workshops was based on:

- a) the introduction of Cleaner Production concepts;
- b) the effectiveness of a change in perception from Pollution Control towards Cleaner Production;
- c) the design of a 'Cleaner Regions' programme as a stakeholders approach.

Figure 2 The total number of participants and their representation for a city or region

Place Workshop	Regional/municipal representation of councillors	Total number of participants
Bulawayo	Bulawayo Gweru Hwange Victoria Falls	18
Harare	Chingoyi Chitungwiza Harare Marondera Mutare Norton Ruwa	11

The basic philosophy of the programme is to introduce another focus on regional/municipal environmental problems. In addition to the introduction of the Cleaner

Production concepts, the presented actual situation generally reflected the traditional positions of industry and government: economy and ecology are in conflict, environmental regulation is weak by a lack of power of the regional EPA. The programme introduced the stakeholders approach to look at the regional strong and weak points from a different level of perspective: the Clean Region level. The participants in both workshops had to elaborate the Cleaner Production concepts in the development of a 'Cleaner Production Policy Plan' for their region or city council. The results of these 'Cleaner Production' policy assessments in various small working groups were given feed-back plenary. The Cleaner Production policy assessment in Bulawayo resulted in a joint outline for the development of a Cleaner Production policy plan. In the other workshop, the development of a Cleaner Production policy plan was connected to the recent research reports about the pollution of the big lake for the Harare drinking water supply. As the sources for the water pollution are diffuse, only a preventative approach can be successful in a certain time frame.

The evaluation of the Cleaner Production Policy workshops was very positive. The Cleaner Production concepts are perceived as new and better answers to old environmental questions. As overall result was felt, that the participants would try to stimulate Cleaner Production approaches in their surroundings and connecting governmental departments for the development of a regional Cleaner Production Policy Plan. For further feed-back and to stimulate participants in the 'back to normal' situation, the need for further assistance by the CPCZ was expressed in all workshops. The CPCZ is willing to assist in awareness raising programmes in the regions/municipalities. This role is often been discussed: in the Cleaner Production philosophy, stakeholders are in the best position to stimulate change both within their organisation as well as in their contacts with other organisations. Many partners however, expressed their need for broader assistance, as most of them feel themselves to be too isolated to create much power for this approach.

## 2.2 *Cleaner Production education materials*

The contacts with the two universities in Zimbabwe were established and elaborated for the awareness raising of Cleaner Production expertise for the academic curricula in both technical and social sciences. The development and implementation of Cleaner Production modules in obligatory courses started in:

- University of Zimbabwe: Department of Mechanical Engineering,  
Department of Geography,
- National University of Science and Technology (NUST):  
Department of Industrial Engineering.

Both the Department of Mechanical Engineering at the University of Zimbabwe as well as the Department of Industrial Engineering at the National University of Science and Technology organise student attachment periods with Cleaner Production projects. The next step for the NUST department was to include Cleaner Production in their modified Industrial Engineering programme in 1997. A newly published American education manual for chemical engineering students was provided. Mr. Q. Kanhukamwe,

head of the Industrial Engineering department of NUST, stayed at ECES for further Cleaner Production orientation in the period 24 November - 5 December 1998;

### 2.3 *High-level Cleaner Production Industrial policy workshop*

The structure of the Zimbabwe industry can be characterised by affiliations of multi-nationals and conglomerates of small and medium-sized companies in different industrial branches. In this structure, the NCPC faced the difficulty how to connect industrialists at a higher management level. Representatives of Industry associations recognised this short-circuit. They proposed the organisation of a half-day workshop, introduced by a famous person, who should attract top managers of industry. This plan was never realised. The reasons are diffuse, partly because the managers of the industry did not have the same view.

### 2.4 *Performance of Total Costs Assessment workshops for accountants in industry*

Accountants are an important category of stakeholders in the dissemination of Cleaner Production concepts. Contacts with representatives of the Association of Chartered Accountants lead to an introduction presentation by Lewin Mombemuriwo. The Association invited the CPCZ to organise two 2-days workshops, one for independent working accountants and one for accountants working inside industrial companies. Despite the help of the Association of Chartered Accountants, the right entrance to reach individual accountants was not easy. The number of participants kept being so low, that one workshop was skipped in advance. Nevertheless the other workshop on December 2 - 3, 1996 was cancelled too because of a lack of participants (5 registrations). An evaluation of the procedure showed, that the list of the members of the Association of Chartered Accountants involves the company name with the executive director or directly the accountant. As the change of workplace is high in Zimbabwe, the names on the list are not up to date. To overcome the problem, that direct mailing should not reach the focused persons, also an advertisement in the Journal of the Association of Chartered Accountants was placed to attend participants for new workshops in 1997. The requests for information were frequent and gave hope. After postponement in March and June, two workshops were planned in August 1997. However, real registration kept being scarce. Two weeks in advance, the first workshop was cancelled. One week later, also the second 2-days workshop was cancelled, because with only 5 accountants the workshop is not effective. The design of the workshop is based on an interactive learning process with a group of at least 15 participants.

### 2.5 *NCPC Stakeholders approach in Zimbabwe*

Regulation of environmental policies is in general weak. The Zimbabwe NCPC Environmental Awareness Programme has focused upon the integration of links between different ministries, the regions and major cities, industry associations, a consumer organisation and education institutes. Based on these positions, the Zimbabwe NCPC's facilitating role have been referred in various Cleaner Production policy workshops for Cleaner Production awareness raising by the establishment of internal and external links

of governmental departments (in Zimbabwe: the Ministry of Environment & Tourism and the Ministry of Trade & Industry), regional environmental agencies (together with other regional departments), industry and other relevant stakeholders. A "Cleaner Region" programme is focused upon as a "positive sum" approach. Besides the regulation, representatives of regions/municipalities are shown, that they can partner as facility managers in communities to develop a "Cleaner Region" network. The results of the 'Cleaner Production' assessments by the various working groups are the following:

The NCPC is willing to assist in awareness raising programmes in the regions/municipalities. This role is often been discussed: in the Cleaner Production philosophy, stakeholders are in the best position to stimulate change both within their organization as well as in their contacts with other organizations. Many partners however, expressed their need for broader assistance, as most of them feel themselves to be too isolated to create much power for this approach. A 'quick scan' analysis stressed the need for further information and regional workshops for councillors to receive commitment of the political level.

The organisation of the Cleaner Production Centre of Zimbabwe

The relationship with the host institute was uncertain from the start, a.o.:

- \* A professional manager should assist for three days a week, however assistance lacked in reality;
- \* Several organisational costs should be paid by the host institute. The reality was different and led to many discussions about what is covered by the UNIDO funds;
- \* The Cleaner Production capacity-building was frustrated by the lack of conditions for proper personnel management. Several Cleaner Production educated consultants left the NCPC;
- \* In 1997 became clear, that the host institute expected profits after three years. The host institute had not internalised the NCPC philosophy. It was reason to disconnect the relation with the NCPC and to stop the housing of the NCPC.

Due to this situation, it was difficult to give follow-up to several initiatives. Continuous influence on Environmental and Economic policy formulation and development, assistance of regional Cleaner Production Plans, Cleaner Production newsletters gave a big workload. In the new business plan capacity-building, facilitation of and feed-back loops to Cleaner production initiatives should have high priority.

#### 4 *Conclusion/recommendation*

In general, participants in Cleaner Production workshops show an open mind for and a good appreciation of the holistic Cleaner Production approach instead of the Pollution Control approach. However, developing networks after being 'back to normal' needs a push by facilitating. The NCPC can stimulate this development via the support of these contacts, but their capacity is limited. That is why NCPC funding from additional projects should include the capacity building for the stakeholder approach and continuous feed-back to Cleaner Production feed-back networks. In the next paragraphs, reflection is

given to several stakeholders and the approach in general.

### Councillors

Also in the workshops with regional and municipal councillors is an open mind for and a good appreciation of the Cleaner Production approach instead of the Pollution Control approach. However, after participation in a workshop a follow-up is needed. Similar to the case with the regional and municipal officials, further feed-back and assistance to stimulate councillors in the 'back to normal' situation, must be part of the developing network of Cleaner Production promoters. This will not say, that the CPCZ must continuously do the work. In the Cleaner Production philosophy, stakeholders are in the best position to stimulate change.

Many participants however, expressed their need for broader assistance, as most of them feel themselves both not knowledgeable enough about the Cleaner Production concepts as well as too isolated to create much power for this approach.

### Stakeholders

The NCPC can stimulate the Cleaner Production concepts development via periodic contacts with regional politicians and officials. Also the maintenance of links with ministries and between ministries and regions has to be fostered. Communication about results of Cleaner Production projects in Zimbabwe and the stakeholder approach are part of this stimulation. At a regional level, workshops participants declare to view the CPCZ as a professional Cleaner Production intermediary advice organisation. The CPCZ is willing to assist in awareness raising programmes in the regions/ municipalities, but their capacity is limited. That is why NCPC funding from additional projects (e.g. in the DANIDA project) should include the capacity building for the stakeholder approach. Meanwhile a structure with regular feed-back (newsletters, asking about the developments and stimulate Cleaner Production, answering questions and providing information in general) has to be developed and maintained conform the actual possibilities. After the regional politicians workshops and the evaluation of the feed-back of regional officials, a network planning for Cleaner Production contact maintenance must be developed.

### Education

Also at the level of education development a regular contact must be developed. This contact gives the possibility to stimulate the progress and assists/intermediates certain follow-up needs. During the actual attachment performance, advice for the projects is given.

As the Department of Industrial Engineering of NUST is looking for possibilities for strengthening their Cleaner Production education capacity via 3-month stays of professors abroad, subsidising the possibility is recommended.

### Accountants

Accountants keep being an important category of stakeholders in the dissemination of Cleaner Production concepts. A research of the conditions for participation of accountants in Total Cost/Benefit Accounting workshops is recommended.



### National Cleaner Production Centre of Zimbabwe

Besides the more year strategy planning for the CPCZ, a.o. three operational targets ask for special attention:

#### I *the physical place of the Centre.*

The CPCZ must show independence on one hand and have no threshold entrance on the other hand. This claims for a physical place in the centre of a city.

#### II *the setting of a host institute:*

There are several considerations from the perspective of an outsider:

- \* The restoration of the original situation: the preferred option has to be sift out; If this option cannot be restored, positions at an university (like in Tanzania) can be considered. The following options need a further investigation:
- \* The Department of Chemical Engineering of NUST can fit on the content level, but the organisational facilities may not be strong enough. Also a removal to another city is not easily done, though Bulawayo is still a major industry city in Zimbabwe.
- \* Different departments at the University of Zimbabwe in Harare:
  - ⊕ the department of mechanical engineering: one professor is very knowledgeable of Cleaner Production; the validity for the whole department is unknown;
  - ⊕ the department of geography: the whole department wants to involve the basics of Cleaner Production in their curricula; if they want to host a NCPC is unknown;
  - ⊕ a specific R & D institute: presumably organisation-fit for hosting; the capability for Cleaner Production hosting needs further investigation.
- \* The Standard Organisation of Zimbabwe:  
the organisational facility is good; a liaison with the NCPC is both for reasons of content as well as willingness for co-operation unsure.

### III Capacity building:

both for generating, marketing and assisting in industrial Cleaner Production demonstration projects in different sectors (a.o. the mining sector) as well as for developing Cleaner Production dissemination networks. Hopefully, the new DANIDA framework can provide the needed facilities.

#### 5 *Situation in 1999*

The stop of the Dutch subsidy of the UNIDO NCPC Programme means, that the direct UNIDO support to the NCPC changed. The NCPC is involved in three major projects in 1999:

- \* UNIDO's Leather project;
- \* UNEP's project on 'Financial mechanisms for Cleaner production investments;
- \* the DANIDA Cleaner Production project.

The NCPC situation is secured on medium term, however on longer term, the recommendations in paragraph 4 should be noticed and elaborated in the running project activities.

#### ANNEX I ECES project team

The main person in charge of this counterpart arrangement was Leo Baas (Senior project manager Cleaner Production & Industrial Ecology at Erasmus Centre for Environmental Studies/Co-ordinator of the International Ph.D. Programme on Cleaner Production, Cleaner Products, Industrial Ecology & Sustainability at Erasmus University).

He participated in workshops, university visits, interviews and reviews in Zimbabwe and prepared necessary materials from the home base.

Wim Hafkamp (Scientific Director of the Erasmus Centre for Environmental Studies at Erasmus University) and JanJaap Bouma (Senior project manager 'Industrial Environmental Management & Total Costs/Benefits Accounting at the Department of Environmental Sciences at Erasmus University) were involved in the preparation of course material for the 2-days workshop on Environmental Management & Total Cost/Benefit Assessments for industrial accountants.

## ANNEXES

- A) Environmental Policy workshops for governmental officials:  
Objectives and schedule workshop
- B) Provided literature
- AA) Policy workshops for councillors: Objectives and schedule workshop
- BB) Provided literature
- C) Provided text for the advertisement for Cleaner Production/Total Cost/Benefit  
Accounting workshops in the Journal of the Association of Chartered Accountants

## ANNEX A

### Cleaner Production Centre of Zimbabwe

Environmental Policy workshops in:

Bulawayo July 22 - 23, 1996  
Gweru July 25 - 26, 1996  
Harare July 29 - 30, 1996

#### Objectives:

1. What is Cleaner Production ?  
Success stories (in Zimbabwe and other countries)
2. Can and will the local government play a role in fostering CP; strategies?:  
direct regulation: laws, regulations, directives, regulatory inspection, permit writing, enforcement;  
indirect regulation: economic instruments; self-regulation: facilitating experiments.  
Experiences in other countries.
3. What are the current policies in Zimbabwe, concerning environment and enterprises?
4. What factors lead to successful recognition and implementation of CP changes ?
5. What role can I play in promoting CP in my role as a governmental official ?
6. How could these new roles be initiated ?  
What kind of needs ?
7. What could be the role of the CPCZ ?

#### Organization:

Cleaner Production Centre of Zimbabwe,  
mr. L. Mombemuriwo

Erasmus Centre for Environmental Studies,  
Erasmus University Rotterdam, the Netherlands,  
mr. L. Baas

First day

- 09:00 Opening remarks: agenda review / logistics / rules  
Opening by Lewin Mombemuriwo (UNIDO / NCPC-programme / CPCZ)
- 09:30 Opening remarks from counterpart institute (Leo Baas/Erasmus Centre for Environmental Studies, Erasmus University Rotterdam, the Netherlands)
- 09:45 Opening by Representative of Urban Council Association;  
Reasons for participation
- 10:15 Break / coffee
- 10:45 What is CP? (presentation by Leo Baas )  
\* concept of CP, illustration of the methodology  
\* history of CP, international developments and projects in Zimbabwe (success-stories of demonstration projects)  
\* video
- 12:00 Developments and projects in Zimbabwe  
(presentation by Lewin Mombemuriwo)
- 12:30 Break / lunch
- 13:30 What is the need for CP; relation between CP and Sustainable Development  
(presentation by Leo Baas)  
\* video  
\* latest developments of CP and Industrial Ecology
- 14:30 Break / tea
- 14:45 A regional strategy for CP, which role can the regional government play ?  
(presentation by Leo Baas, followed by discussion)  
\* development of environmental strategies and policies formulation worldwide  
\* strengths and weaknesses; what can be learned from these developments  
\* what some governments are doing and what governments can do to promote CP  
\* illustrations of municipal initiatives in Graz, Austria (öko-profit project) and Rotterdam, the Netherlands (Stimular project)  
\* CP education developments
- 17:00 End of the first day

Second day

- 09:00 Short wrap-up of the first day
- 09:15 Toolbox of policy instruments:  
legislative, economic, communicative
- 10.30 Break / coffee
- 11.00 Development of strategies and policies for the region  
(introduced by one speaker from the local government):  
current activities in Zimbabwe / local perspectives (definitions, authorities,  
policies, initiatives, see what is going on; clarify what policy / authority exists and  
what doesn't)
- 11.45 Questions for information and issues for discussion
- 12:30 Break / lunch
- 13:30 Development of strategies and policies for the region (interactive discussion):  
\* strong and weak points current strategies  
\* inventory of new ideas  
\* need for assistance and/or training?
- 15:15 Break / tea
- 15:45 Initiation of networks for the promotion of CP (interactive discussion):  
the role of CPCZ in the development of strategies and policies network develop  
ment with regional government)
- 16:45 Closing remarks by Lewin Mombemuriwo:  
Conclusions, recommendations, agreement about further pathways
- 17:00 End of the workshop

Annex B

LITERATURE

Dieleman, Hans & Franc van den Berg, Networking for Pollution Prevention; the case of the STIMULAR-project, Paper Second European Roundtable on Cleaner Production and Cleaner Products, Rotterdam, 1-3 November 1995, p 1-4

Kazmierczyk, Pawel, Business Environmental Management Systems, The Bulletin, Spring 1996, p 10 (looks at EMS strategies for businesses in Central and Eastern Europe)

Peel, Clayton, Environment threatened, The CHRONICLE, Bulawayo, 24 April 1996, p 1 (about the mass death of fish at Lake Chivero)

PREPARE: Promoting Cleaner Production in Austrian Industries, Programme Flyer 1994

Various reports from governmental organizations, universities and NGO's for viewing during the workshops.

## ANNEX AA

### Cleaner Production Centre of Zimbabwe

Policy workshops for councillors in:

Bulawayo June 27, 1997

Harare June 30, 1997

#### Objectives:

1. What is Cleaner Production ?  
Success stories (in Zimbabwe and other countries)
2. Can and will the local government play a role in fostering CP; strategies?:  
direct regulation: laws, regulations, directives, regulatory inspection, permit writing, enforcement;  
indirect regulation: economic instruments; self-regulation: facilitating experiments.  
Experiences in other countries.
3. What are the current policies in Zimbabwe, concerning environment and enterprises?
4. What factors lead to successful recognition and implementation of CP changes ?
5. What role can I play in promoting CP in my role as a councillor ?
6. How could these new role be initiated ?  
What kind of needs ?
7. What could be the role of the CPCZ ?

#### Organization:

Cleaner Production Centre of Zimbabwe,  
mr. L. Mombemuriwo

Erasmus Centre for Environmental Studies,  
Erasmus University Rotterdam, the Netherlands,  
mr. L. Baas



- 09:00 Opening remarks: agenda review / logistics / rules  
Opening by Lewin Mombemuriwo (UNIDO / NCPC-programme / CPCZ)
- 09:15 Opening remarks from counterpart institute (Leo Baas/Erasmus Centre for Environmental Studies, Erasmus University Rotterdam, the Netherlands)
- What is CP? (presentation by Leo Baas)
- \* concept of CP, illustration of the methodology
  - \* history of CP, international developments and projects in Zimbabwe (success-stories of demonstration projects)
  - \* video
- 10:30 Break / coffee
- 10:45 A regional strategy for CP, which role can the regional government play ? (presentation by Leo Baas, followed by discussion)
- \* development of environmental strategies and policies formulation worldwide
  - \* strengths and weaknesses; what can be learned from these developments
  - \* what some governments are doing and what governments can do to promote CP
  - \* illustrations of municipal initiatives in Graz, Austria (öko-profit project) and Rotterdam, the Netherlands (Stimular project)
  - \* CP education developments
- 12:00 Developments and projects in Zimbabwe (presentation by Lewin Mombemuriwo)
- 12:30 Break / lunch
- 13:30 Toolbox of policy instruments:  
legislative, economic, communicative
- 14.30 Break / tea
- 14:45 Initiation of networks for the promotion of CP (workgroups and plenary interactive discussion): the Cleaner Production Policy Regional Workplan (including the role of the CPCZ in the development of strategies and policies network development with the regional/municipal government)
- 16:45 Closing remarks by Lewin Mombemuriwo:  
Conclusions, recommendations, agreement about further pathways
- 17:00 End of the workshop

Annex B6

LITERATURE

Dieleman, Hans & Franc van den Berg, Networking for Pollution Prevention; the case of the STIMULAR-project, Paper Second European Roundtable on Cleaner Production and Cleaner Products, Rotterdam, 1-3 November 1995, p 1-4

Kazmierczyk, Pawel, Business Environmental Management Systems, The Bulletin, Spring 1996, p 10 (looks at EMS strategies for businesses in Central and Eastern Europe)

Peel, Clayton, Environment threathened, The CHRONICLE, Bulawayo, 24 April 1996, p 1 (about the mass death of fish at Lake Chivero)

PREPARE: Promoting Cleaner Production in Austrian Industries, Programme Flyer 1994

Various reports from governmental organizations, universities and NGO's for viewing during the workshops.

## Annex C

Provided text for the advertisement for Cleaner Production/Total Cost/Benefit Accounting workshops in the Journal of the Association of Chartered Accountants:

### **WORKSHOP ON CLEANER PRODUCTION AND ECONOMICS**

Organized by Professor dr. Wim Hafkamp and dr. Jan Jaap Bouma of the Erasmus University Rotterdam in the Netherlands in co-operation with the National Cleaner Production Centre of Zimbabwe.

#### ***Objectives***

The workshops give insight into the business economic consequences of Cleaner Production. The relationship between environment and economics will be explored from the perspective of management accounting systems and techniques that can be applied in corporate environmental management.

#### ***International economics***

Cleaner Production has a crucial role in complying with international standards on environmental management (ISO 14001). Also, the cost structure of production processes are influenced by implementing the concepts of Cleaner Production. From the perspective of international economics, the impact of Cleaner Production at the international trade and competitive position is mapped.

#### ***Environmental management accounting***

The relationship between Cleaner Production and Cost/Benefit Accounting is intensive. During the workshops the development of environmental management within companies is explored. Several motives to calculate environmental costs are identified. It is shown that, depending on the purpose for calculating environmental costs, a set of accounting systems (e.g. Activity Based Costing) and techniques (e.g. Total Costs/Benefits Accounting, Full Cost Accounting, Life Cycle Costing) can be used.

#### ***Planning***

In June ... 1997, a two day introductory workshop is organized. The workshop delivers practical knowledge on international economics and management accounting systems and techniques. In addition to the introductory workshop, a follow-up workshop in August ... 1997 is organized. Based on the basic knowledge of environmental management accounting several case-studies are assessed. Also, the workshop provides additional insights in the implementation of the concepts of environmental management accounting.

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