About the Training Manual
UNIDO / UNEP Training Manual on Capacity Building for Cleaner Production Centres

Introduction to the Training Manual

Welcome to the UNIDO / UNEP Training Manual on Capacity Building for National Cleaner Production Centres!

Cleaner Production Centres (CPCs)/ National Cleaner Production Centres (NCPCs) have become a major source of expertise and advice on cleaner production in their respective countries. To date, 24 NCPCs have been created within the context of the NCPC Programme established jointly by UNIDO and UNEP. In parallel, more than 100 Cleaner Production Centres (CPCs) have been created through bilateral, governmental and other forms of assistance. There is now an extensive network of cleaner production-related institutions capable of delivering cleaner production at the local and national levels, and it is envisaged that this network will be enriched through the addition of more (new) Centres.

An upcoming or newly established Centre requires information and guidance about the various aspects of establishing and running the same. Previous experience suggests that it is both time-consuming and expensive to provide such guidance through an international expert. Additionally, there is a recognized need for fine-tuning the operations of established Centres as well. UNIDO and UNEP have conducted training sessions and workshops for NCPC Directors in the past. However, given the lessons learnt through experiences of the Centres at the ground-level and requests for capability enhancement from the Centres themselves, it became important to revisit, recast and develop related material in a commonly understood and consistent form. The attempt to address these realizations has led to the preparation of this Training Manual, with the result that it guides the user on how to establish and operate the Centre in a professional, business-like and sustainable manner.

The contents of this Training Manual have been peer reviewed by UNIDO / UNEP and tested at the Workshop for Capacity Building for National Cleaner Production Centres: UNEP / InWENT / UNIDO Training Programme on Establishing and Operating National Cleaner Production Centres held in Berlin, Germany from December 16 – 20, 2002. This workshop was attended by 13 participants from 12 countries: Bangladesh, Bulgaria, Greece, Kazakhstan, Lebanon, Nepal, Palestine, Romania, Sri Lanka, Thailand, Uganda, and Uzbekistan.
About this Training Manual

This Training Manual is an accompaniment to the UNIDO / UNEP Guidance Manual on *How to Establish and Operate Cleaner Production Centres*. Consequently, the structure for the Training Manual closely follows that of the Guidance Manual, which may be used as a referral source. The Training Manual comprises of:

- Instructive Presentations in the form of PowerPoint slides,
- Key Questions capable of encouraging participation and stimulating discussion amongst participants, and
- Challenging Case Studies to be solved through the medium of group-work.

A complete outline of its contents is provided below.

Presentations (PowerPoint Slides)

As mentioned earlier, the structure of the Training Manual closely follows that of the Guidance Manual. Thus, the Presentations component of the Training Manual closely map with the various Parts of the Guidance Manual, as shown below. The Presentations cover those Parts / Sections of the Guidance Manual which involve a hands-on problem-solving approach.

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Presentation 14 on **Guidance on Financial Analysis of Cleaner Production Options** provides the novice with easy-to-grasp definitions and examples concerning cost benefit analysis.

Further information and guidance on investment into and financing of cleaner production options may be had from **Profiting from Cleaner Production: Resource Kit for Training**. This kit is designed to aid integration of cleaner production and efficient resource management into investment decision-making processes. It includes an introduction to capital budgeting and funding of projects, details about the cleaner

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1 Available in CD-ROM format. Visit [www.financingcp.org/training/kit-home.htm](http://www.financingcp.org/training/kit-home.htm) for more details.
production investment process, checklists for action, short presentations for senior executives, and so on.

**Key Questions**

The Key Questions component of the Training Manual is designed to provide the participants with food for thought, and thereby encourage participation and stimulate discussion. Discussions are primarily to get a sense of comparative assessment, listening to competitive ideas or introducing innovative ways to solve problems. This component includes questions on the topics of Revisiting Cleaner Production and How to Promote Cleaner Production in National Policies.

**Case Studies**

The Case Studies component of the Training Manual includes something for everyone, irrespective of their previous exposure to cleaner production. There are three case studies, each accompanied by a set of General Instructions and associated Worksheets. The case studies are to be solved through the medium of group-work, which will be guided by a broad “problem-solving process”, in the sense of competition, pressure of time and limited or incomplete information.

The Case Studies component comprises of:

- **Kneedafix Country Case Study** – This case study is intended to provide an idea of the establishment of an NCPC. The case study is presented in the form of a fictitious industrialized coastal country named Kneedafix. Information about the country of Kneedafix in terms of country facts, its environmental setting, governance, socio-economic scenario, industrial development and its impacts, urbanization, environmental consultants and NGOs, judicial interventions, profile of institutions and future challenges is given in the form of a situation analysis. The information is presented in an interesting format consisting of maps, newspaper clippings and explanatory profiles.

  Each aspect of the establishment of the NCPC is fully described in Presentations 2 and 3, which provide the base for understanding the nuances involved in setting up the NCPC in Kneedafix. Alternatively, Parts 3, 4 and 5 of the Guidance Manual may be used as a backup referral guide.

  A specially designed interactive Excel Worksheet titled Resource Requirement for the Operation of the NCPC rounds off the case study nicely, in that it allows the participants to estimate and
plan for the various resources required in the set-up and operation of the Centre. Presentations 4 and 12 also provide a backdrop for this particular sub-topic.

The outcomes of this case study include the preparation of a conceptual plan, basic design and establishment plan for a Centre.

- **The Case Study of the Spicy Deep Fried Peanut Factory** – This case study is designed to be an “introductory” study for cleaner production assessments. It is not necessary for participants to have a technical background to answer the questions / worksheets which are posed here in the pattern of cause analyses. Participants will be required to develop a preliminary process flow diagram and a materials and energy balance, select an audit focus, identify sources and causes of waste generation and finally, suggest possible cleaner production measures. Appended to this case study is a Small Business Information Worksheet, which encourages the company owner(s) to provide a brief history of the business and the future plans for it, and their credit history, and so on. Such an information worksheet in turn, can provide the participants with crucial information about the business and help them pinpoint cleaner production measures for the same. Part 4 (Sections 4.4.1 and 4.4.2) of the Guidance Manual may be used as a backup referral guide for this case study.

- **Case Study of Applesoft Kneedafix Inc.** – This case study is intended to provide the participants with a slightly more in-depth look at cleaner production assessments and cleaner production demonstration projects. The objectives here are to provide the participants with a hands-on experience in conducting cleaner production assessments and developing project proposals for demonstration projects, so as to obtain financial assistance. Participants will be required to develop a detailed process flow diagram, an ecomap and a detailed material balance, conduct a cause diagnosis for low productivity, identify and screen cleaner production options and prepare a proposal for securing financial assistance for a demonstration project. Consequently, it is recommended that the participants have some technical knowledge which will enable them to easily solve the questions / worksheets posed herein.

Each aspect of the cleaner production assessment is fully described in Presentation 7. Alternatively, Part 4 (Section 4.4) of the Guidance Manual may be used as a backup referral guide. Similarly, all aspects of cleaner production demonstration projects, including the preparation of a proposal for securing financial assistance, are explained in Presentations 8 and 10, while Part 4 (Section 4.5) and Part 5 (Section 5.5) of the Guidance Manual provides the backup reference for the same.
Note that completion of the Case Study of the Spicy Deep Fried Peanut Factory requires comparatively less time than the Case Study of Applesoft Kneedafix Inc., due to its “introductory” nature. Typically, the former may be completed within 2 hours, while the latter may require 4 – 5 hours.
About the Training Manual

How to use this Training Manual

Training to suit the needs of the audience

The Training Manual may be used innovatively in a variety of combinations depending on the needs of the participants and the decided training profile; i.e. section of the clientele / trainees being catered to (such as new upcoming Centres, media persons, financial institutions and so on), and the nature of the training (such as awareness-raising sessions, specific skill-building training workshops, etc.). For instance, Presentation 1 on Understanding Cleaner Production and the Key Questions on Revisiting Cleaner Production may be used to raise awareness in cleaner production among the audience. Similarly, the Director of a Centre may make use of Presentation 5 on How to Conduct Awareness Programmes in Cleaner Production to explain to the Centre staff and local consultants the methodology and approach towards conducting awareness-raising sessions. The Directors of the Centres may be guided towards matters concerning the promotion of cleaner production in national policies using Presentation 11 and Key Questions on How to Promote Cleaner Production in National Policies, tied in with events such as roundtables.

Training as per the time available and suggested training modules

The subject matter of the training workshop or seminar would also depend on the time allotted for the same. For instance, (subject to the needs of the intended audience) shorter training modules of 3 days could cover basic guidance on matters like raising awareness about cleaner production, followed by a presentations on the establishment and operation of a Centre and the Kneedafix Country Case Study. If the Director of the Centre wishes to conduct a training module on the delivery of basic and strategic services of the Centre to its staff, local consultants and partners, he / she may opt for a longer training period of say 4 to 5 days, with Presentations 5-10, 12 and 13 forming the crux of the workshop, supplemented with the Applesoft Kneedafix Inc. Case Study. Another training module may combine the topics of cleaner production assessments and demonstration projects, using Presentations 7, 8, 10, 13 and 14, in tandem with the Case Study of the Spicy Deep Fried Peanut Factory, and the Applesoft Kneedafix Inc. Case Study. The training module chart given below summarizes some of the possible modules.
## TRAINING MODULE CHART

<table>
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<tr>
<th>MODULE 1: Raising awareness on cleaner production (introducing a new concept amongst Centre staff and partners and equipping them to do the same)</th>
<th>MODULE 2: Equipping Centre staff with knowledge on the concept of cleaner production, as well as establish and operate the Centre</th>
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<td>Presentation 4 – How to Estimate the Resource Requirements and Meet the Financial Needs of the CPC</td>
<td>Case Study of the Spicy Deep Fried Peanut Factory</td>
<td>Presentation 12 - Guidance on Generating Revenue from Services</td>
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<td>Presentation 13 – How to Monitor and Review the Progress of the CPC</td>
<td>Applesoft Kneedafix Inc. Case Study</td>
<td>Presentation 13 – How to Monitor and Review the Progress of the CPC</td>
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<tr>
<td>Kneedafix Country Case Study with Excel Worksheet titled Resource Requirement for the Operation of the CPC</td>
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ABOUT THE TRAINING MANUAL

More importantly, the contents of the Training Manual may be blended with Centre experiences so as to enrich the training experience, and ensure that the manual retains its vibrancy as a “living content”.

Guidelines on Conduct of Training

While planning for and conducting training workshops, it is important to keep in mind a few important points. Some of them may sound minor, but in reality they are crucial to the delivery and success of any training workshop.

About the participants

Selecting the “right” participants is one of the crucial steps in the design of a training workshop. This is because the success of a training workshop is a function of the team of participants it enjoys.

It is crucial that the participants have a background that is relevant to the subject of the workshop; they should be in need of the training. However, this does not mean that it is mandatory for them to be knowledgeable about the subject (otherwise they wouldn’t need the training anyway!).

Personnel from the industry, Directors of the Centre, Centre staff, its partners, the media, environmental non-governmental organizations, financial institutions, and government organizations are often potential participants for training workshops on cleaner production.

On their part, the participants

• Should be good listeners;
• Should not be averse to working in teams;
• Should not be dominating or aggressive in nature (leadership and domination are two different things. A leader is always a good listener too); and
• Should be interested in the training and be curious to know more.

Given the emphasis on interactive groupwork, the number of participants is important for effective training. It has been found to work most effectively when 15-25 participants are involved. With much smaller numbers, some of the stimulating debate may just not happen.

About the trainers

The trainers of a workshop have the critical responsibility of making the workshop exercises successful. Although the training material provides substantial help in the process, the trainers ultimately influence the effectiveness the workshop. This is so because the
trainers engage in direct interaction with the participants and greatly influence their learning process. A trainer may very well be an expert in the subject matter at hand, but if the training approach is not clearly understood by him/her, then the benefits of training are difficult to achieve.

It is equally important that the trainers should not try to pretend that they “know it all”. Training should take place by learning through interaction and participation. All possibilities of domination, ego and aggressive intervention in the process should be strictly avoided.

The trainers should not play the role of lecturers. Rather, they should act as facilitators in the learning process. Guiding and leading the participants to the solutions and not giving the answers right away should be their focus.

When the participants introduce themselves at the start of the workshop, the trainers will have a chance to find out which sections of the society (i.e. media, industry personnel, Directors of the NCPCs / CPCs, etc.) they represent and their names. Such introductions provide the trainers with the opportunity to note down the participant’s names and backgrounds. The trainers may also fix some distinguishing features so that they may recognize the participants easily and refer to them directly by name, as experience shows that participants are much more likely and willing to participate in such cases.

During the course of the training, there are likely to be some discussions following the case study exercises or key questions. These discussions should be skillfully steered by the trainer to ensure that major issues emerge and are analysed by the participants. Indeed, such discussions are feedback sessions designed to be an opportunity for the trainer to “lecture” the participants on the “correct” answers. However, it is equally possible and probable that some issues may have no “correct” answers!

Lastly, it is prudent for the trainers to always arrive early (well before the workshop commences), look at what is available in terms of space and organize accordingly.

About the venue

Selection of a venue and arrangements at the venue play important roles in ensuring that the training workshop is effectively conducted.
Ideally, a training venue should be located centrally in the region so that participants can commute easily; a training workshop should typically be a 3-5 day resident activity so that the participants are focused and concentrate on learning. The lecture room should be equipped with facilities such as a good sound system, presentation equipment, flip charts, drawing board, adequate ventilation and lighting. In addition to the main lecture room, it would be prudent to have smaller rooms for groupwork as it yields better results than when conducted in isolated locations. Rooms where groupwork is conducted should have central tables and chairs for the participants discuss and work in groups. Lecture rooms with seats in rows are not very good locations for groupwork. It is hard for participants to have discussions with other members of their group, if they are all sitting in a row. A circular set-up is much better for discussion. Facilities like flip charts, calculators, writing material, drinking water, etc. should be provided to help the participants in concentrating on the groupwork.

Prior arrangements should be made for display banners at the venue, announcing the promoters / organizers of the training workshop, its sponsors and partners. The venue would also need a notice board or a message board for the participants announcing the name of the lecture room for the training workshop and providing directions to it. Participants should be instructed to view the contents of the message board for new information and updates from time to time during the conduct of the training workshop.

About arranging for facilities

Certain important facilities should be arranged at the venue before conducting the training workshop. These facilities will be used by the trainers as well as the participants. Such facilities include the following:

- Seating arrangements in the main lecture room and groupwork rooms should be adequate and comfortable, providing enough working space. Chairs with foldable writing platforms on the side are preferable in the main lecture room. Simple upright chairs would suffice for the groupwork exercises;

- All the rooms should have ample ventilation and lighting (preferably natural) so as to create a pleasant and comfortable ambience for conducting the training workshop.

- Audio-visual facilities are extremely important. Having Internet connectivity is useful;
• Tea / coffee arrangements should be made in the main lecture room as well as the group work rooms. Such refreshments should not be served, but placed on a table in the rooms. This allows the participants have discussions while having refreshments;

• Lunches served should not be very heavy. This will make the participants sluggish and discourage them from actively participating in the lectures and groupwork; and

• Accessories needed for the groups to complete the groupwork exercises such as calculators, pencils, flip charts etc., should also be provided.

About developing the day’s programme or schedule

Day one should begin with the registration of the participants. Participants should be asked to fill up a form that captures information on their preferences and choices in terms of meals, stay or any other facilities required. Being the first day of the workshop, it may be advisable to start the day a little earlier than the normal timings. For instance, to accommodate registration and the opening ceremony, the programme may be commenced at 0800 hours instead of the usual 0930 hours. All other days would begin at 0930 hours and end at 1730 hours.

The opening ceremony formally commences the training workshop. Speeches in this ceremony motivate the participants and inform them about the proposed objectives and content of the workshop. This is necessary so that they know how the workshop is going to be conducted in the next few days.

Next, a series of presentations should be conducted, interspersed with breaks for tea / coffee and lunch and worksheets for group work.

A sample programme is provided below. Programmes for other days of the training workshop may be designed accordingly.
About forming groups

Another major task in conducting training modules / workshops involves the formation of groups for the purpose of groupwork exercises. This is another vital prerequisite for the training exercise to be effective.

It would be prudent to limit group strength to a maximum of 6-7 participants each. This will help in effective intra-group discussions. Having too many people in one group may tend to dilute the discussions and some people may dominate the outcomes of the group. It is also relatively easier for the trainers to manage a small group. However, do not form a group of less than 4 participants. This could lead to insufficient inputs for meaningful groupwork outcomes.

The number of groups in a training exercise should not be less than 2-3; the performance of a training exercise can be better evaluated if more than one outcome results from the exercise. This can happen only with an adequate (but comfortable) number of groups. It follows then that in order to achieve good results, the training workshop should be run with no less than 12 participants.

The background of the participants, their characteristics and behavioral patterns, along with their relevance to the subject of the training go into deciding the groups of the training exercise. It is important to blend a judicial mix of qualities and expertise amongst the participants in the group - leaders, young enthusiasts, the mature, the experienced, along with specific backgrounds like technical, legal, social, NGO, etc. A preliminary attribute analysis may help in grouping the participants.
Do not put people from the same organization into the same group, especially if one is senior and the other a junior. It is likely that the junior member may not speak or participate effectively.

It is necessary to have a group leader for each group, who will lead the group discussions, manage the group and present the group findings. The group leader should be patient, cooperative and used to closely working in groups. Most importantly, the participants should trust him / her to present their views and opinions. Consequently, the participants themselves should choose the group leader.

About the evaluation form

A training activity can be effective only if feedback, evaluation and corrections are included in its planning and conduct. Consequently, it is necessary to understand from the participants of the training workshop what they liked and what they did not and why. Since the focus of the training workshop is likely to be on interaction and participation, it follows that participant feedback needs to be incorporated in the design and content of the training workshop. Considering the multidisciplinary blend of the participants it should not be surprising if different participants have different opinions about the content and presentation of the training.

Hence, a format (i.e. an evaluation form) needs to be prepared for the evaluation of each training workshop. The evaluation form should address the various aspects of the training exercise. It is necessary to include all the components such as lectures, presentations, key questions, groupwork assignments, reading material and casework in this review. The evaluation criteria should seek the participants’ information on the workshop design and conduct, trainers, its presentations, resource materials, groupwork, and the overall effectiveness of the entire workshop. It is also important to include questions for feedback on the venue facilities, catering services, etc.

Generally, multiple choices should be provided with options such as satisfactory, excellent etc. Alternatively, the evaluation may be done for different aspects on a scale of 1 – 5, with “1” indicating a “very poor” rating and “5” indicating an “excellent” rating. Adequate space should be provided for written comments from the participants.

Evaluation forms should be treated in the strictest confidence. The may even be anonymous (i.e. the participant is not required to divulge his / her identity), since it is felt that participants may be encouraged to be more open and honest if such is the case.
The evaluation form should be circulated amongst the participants for their feedback, on the last day of the training workshop. A time period of 15 minutes should be enough to complete the evaluation form.

**About the training workshop report**

The training workshop report presents a means to capture the proceedings of a training workshop, the extent of achievement of its objectives, its content, structure, efficacy in conduct, participant feedback from the evaluation forms, and suggestions on corresponding modifications / changes.

Such a report helps the trainers / developers to design the training content and workshops for the future based on past experience.

An ideal Table of Contents of a training workshop report could have:

- Introduction - a brief on the background and approach of the training workshop;
- The subject of the training workshop in terms of the content addressed;
- Details of the development team - introduction to the team members responsible for developing the training workshop;
- A detailed schedule of the programme of the workshop;
- Details of the experts or resource persons in the training workshop, their backgrounds and experiences;
- Details of the participants attending the workshop, their contact information, background and relevance to the subject;
- Details about the venue of the workshop, the facilities and arrangements provided;
- Conclusions - general observations and concluding remarks based on the performance evaluation of the workshop, including tips based on the lessons learnt; and
- Outcome of the evaluation report and the steps to be taken subsequently.

And finally, group photos of participants and resource persons for record and pleasant memories. Happy training!