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**Pilot Programme for the Promotion of
Environmental Management in the Private Sector
of Developing Countries (P3U)**

DRAFT VERSION

**Training Module on
Company-based Resource Management
for SME in Developing Countries**

Structure of a Concept based on the CEFE Methodology

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1. Introduction

The present basic concept presents a training module on environmentally sound resource management at company level, designed for a training course of two and a half days.

The training module has been developed to link two factors, i.e. the need, especially of small- and medium-sized companies, to reduce production cost through improved resource management on the one hand, and the negative environmental impact caused by SME which is becoming increasingly relevant in developing countries on the other hand.

The concept of this module is based on the CEFE methodology (Competency-based Economies through Formation of Entrepreneurs) which is used by projects and institutions all over the world as a training concept for the promotion of SME. It aims at enabling participants to identify, in a so-called "guided self-analysis", their strong and weak points, to analyse their social and economic environment with regard to their business concept, and to develop and implement a specific line of action resulting from the interaction between their personality and the business or business idea. Thus, the method actually aims at enabling participants to gain competency in business management and at the same time to acquire management instruments.

Besides other principles of the CEFE methodology - like action-learning or participatory moderation of the courses - it is the orientation towards the acquisition of competency through personality development which provides the didactic-methodological basis for the training module.

Objectives of the Basic Module

Participants are able to

- identify and assess typical, ecologically relevant weak points in an enterprise, and to estimate their cost relevance;
- assess the environmental relevance of material flows;
- estimate the cost relevance of ecological weak points;
- identify and prioritise suitable measures;
- plan and monitor the implementation of improvements.

Participants in the Training Course

The training module has been developed for participants who can be characterised as follows:

- owner of an existing formalised producing enterprise (small- or medium-sized);
- he/she follows a management strategy and is aware of costs, but has little knowledge about environmental effects of production processes and weak points in his enterprise;
- neither company staff nor clients are very conscious of environmental issues, customers are primarily price-oriented;
- the society as a whole is little aware of environmental issues;
- No subsidies or other allowances are granted to companies that introduce environmental management.

This characterisation of entrepreneurs, i.e. participants, and economic environment corresponds to the reality in most developing countries.

2. Structure of the Training Module

The diagram in annex 1 illustrates the structure of the training module.

While steps I to V are implemented during the two-and-a-half-day training course, step VI is carried out after the course. It is, however, an integral part of the course and indispensable for achieving the training objectives. Step O, which is about the selection of participants, is carried out prior to the training course.

Specific selection criteria will be elaborated at a later stage. During the initial phase, courses should be addressed to participants related to projects or institutions of development cooperation, like e.g. IBD (Integrated Consultancy Services) or Action-Learning Projects.

Basic Structure

The basic structure of the training module is presented in the following. A detailed plan, which includes exact time-frame, side activities like presentation of participants etc., will be included in the Trainers' Handbook still to be elaborated.

I. The “Pancake“ Experience

A) In groups of four to six persons, participants prepare a pancake dish with a filling which is typical of the respective region. Called “pancake“ in our example, it would be empanada, Omelette, crêpe, pilmenijs, tortillas, pasteis etc. in other countries. While raw materials, i.e. ingredients and equipment are provided, the groups have to organise and carry out the preparation, production and disposal of (kitchen) waste.

Each group is watched by an observer who is supposed to note down, according to a pre-fixed system, any material flows during the production phase without actively interfering into the procedure. The observers' results will be analysed at a later stage.

B) This exercised, which is based on the action-learning cycle, serves to discuss the experience made by the individual groups during the activity and to filter out key words, which are important to company-based resource management. During this discussion, the facilitator, i.e. the CEFÉ moderator, gets useful information on the participants' state of knowledge regarding environmental impact of production processes, waste disposal, utilisation of raw materials, production of rejects, consumption of energy and water etc.

During the rest of the course, the key words will serve as a and will be further elaborated in exercises and theoretic inputs.

Didactic-methodological elements

A **structured-learning exercise (SLE)** combined with a production component has been chosen for this activity for the following reasons:

- Since participants come from producing enterprises, a production component makes it easier for them to link this activity to their own working realities.
- The product chosen for the activity must have the following characteristics: it can be produced within a short period of time, it is generally known, it requires different raw materials and forms of energy, and it can easily be produced in different countries with only slight modifications required.
- The active involvement of all participants right at the beginning of the course helps to motivate them.
- In the subsequent discussion, all participants have an opportunity of getting involved, and the moderator is in a position to assess the participants' state of knowledge.

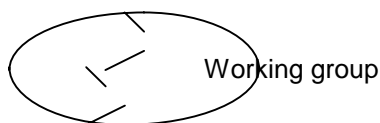
II. Material Flows

A) During the second exercise, the groups are supposed to describe and assess the material flows that occurred during their pancake production. With the support of the observer and his notes, they are furthermore expected to analyse weak points in the process.

The results of the respective group works are visualised in a flow-chart, and subsequently presented and discussed in the plenary.

Didactic-methodological elements

The “producers” experience and the observers' comments are put together during unguided work in small groups and results in the elaboration of a flow-chart which illustrate the pancake production process and shows weak points and suggestions for improvement.



B) After the group work has been analysed, the facilitator gives a theoretic input, i.e. a case study on material flows in furniture production.

INPUT “PROFESSIONAL CHART“ ON MATERIAL FLOWS

Complementing participants' efforts, an example is presented to show how material flows are described in a professional way. The case study of a furniture factory seems particularly suitable for the following reasons:

- Furniture are produced in almost any developing country. Thus, the application of this case study is realistic to participants in many countries.
- Furniture are produced by enterprises of different sizes, but especially in small- and medium-sized enterprises.
- In most cases, a medium level of technology is used.
- Furniture production has a number of environmentally relevant aspects.

The example should be structured as follows:

- The major production steps are described in a flow-chart.
- For each of the production steps (illustrated in separate boxes), arrows indicate
 - which inputs are used in the respective step,
 - which outputs result from this step.
- Important (environmentally relevant) inputs in this process are likely to be:
 - timber,
 - wooden or plastic veneers,
 - energy (electricity, heating oil or gas, possibly leftovers from wood processing),
 - water (for steam production),
 - paint, stain, varnish with or without solvents,
 - metal and/or plastic components like nails, screws, fittings, locks.
- Outputs (apart from the final products) are:
 - unusable pieces of wood,
 - pieces of wood that remain from cutting,
 - sawdust and wood shavings,
 - vapours from water and resin (drying chambers),
 - solvent fumes from veneering and varnishing processes,
 - waste water.

III. Calculation of Costs

The third exercise again is a structured learning exercise during which participants are supposed to produce a good in small groups. This product could e.g. be a doll or an artistic greetings card; a draft of it is presented as a model. The groups are supposed to buy the necessary materials and tools with their own money from a supplier (performed by the facilitator); they can chose between standard and environmentally sound materials and tools at different prices.

During the planning process, they are also expected to calculate the retail price of the product.

At the end of the production phase, the waste is weighed and the producers fined accordingly. Thereupon the groups are supposed to sell their products at a profit.

The same good is produced once again In a second round, with the focus this time on avoiding or re-utilising the waste, e.g. through filling or fitting out the dolls.

Didactic-methodological Elements

SLE with a subsequent processing (analytic) phase, where strategies of avoiding and reusing waste are to be elaborated, not only with regard to the example, but beyond.

The cost relevance of ecological weak points is to be calculated first with the example of doll production, and subsequently with the case study on furniture production presented in the second exercise.

INPUT “COST RELEVANCE OF ECOLOGICAL WEAK POINTS“

This time, the case study on furniture production is to be analysed with regard to the cost relevance of ecological weak points:

- The objective is to quantify some of the important material flows shown in the first example. Participants are supposed to estimate the quantities of some rather obvious inputs and outputs described in these material flows.
- The second step is to find out which costs are caused by major inputs. In an exercise, participants are expected to make their own estimates.
- In this context, some of the calculations presented by Dr. Ulrici and Dr. Feltes in their module on manuals could be used.
- The quantification and cost assessment of outputs is rather problematic in the following cases:
 - Provided that regular waste water treatment exists, many developing countries do not charge specific treatment fees according to the actual consumption.
 - Another problem is how to assess the costs of negative environmental impact, pollution or damages to staff members' health in financial terms (e.g. zinc fumes in an electroplating enterprise which deposit on neighbouring rice fields, damage to staff health by fumes, dust or noise). Participants are to know the meaning of internal and external costs and to be sensitised for this problem.
- A third step is to elaborate suggestions on how the furniture factory could reduce costs or even attain additional income through
 - avoidance of waste and
 - re-utilisation of waste.

Participants are to make some selective estimates.

- The last step is to elaborate the positive environmental effects resulting from such a solution (**win-win situation**).

IV. Application

For a role play based on a typical case study of a medium-sized producing enterprise (furniture production or similar), participants are assigned the role of different actors (entrepreneur, staff member, supplier, customer etc.). The focus is on the entrepreneur who - in interaction with the other actors - is supposed to develop strategies to

- motivate his staff to pay attention to environmental effects in their business activities;
- convince his clients of potential advantages of environmentally sound production.

Didactic-methodological Elements

On the one hand, this **role play** serves as a negotiation exercise for the participants, on the other hand it gives a feedback on how far participants have internalised environmentally relevant aspects of production processes.

V. Action-Learning Set

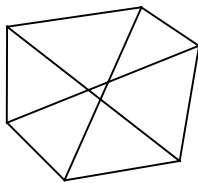
VI. Monitoring

During the last part of the course, participants are to link the course contents to their own company and experience.

Each participant is to individually draw up a flow-chart of the production in his company and to point out weak points, if possible. These weak points are further analysed in a subsequent group discussion, and participants are to jointly elaborate suggestions for improvement, which then are to be initiated during the last phase of the course. In order to ensure sustainability beyond the end of the course, it is envisaged that participants arrange for further periodic meetings and mutual visits to the respective companies on the basis of the Action Learning Sets.

Didactic-methodological Elements

Action-Learning Sets



Introduction

Action Learning Sets (ALS) is a method designed to establish self-learning groups and to monitor the learning effect of a training course beyond the end of the seminar. An ALS consists of five to ten participants who are motivated by common geographic or sector-specific interests to hold formal group meetings in order to discuss the participants' individual problems and to elaborate possible solutions. Once this process has been initiated, it usually continues without external intervention by a consultant. This also means that the role of a promoting institution is limited to giving a short-term organisational impulse. The prospect of discussing each individual participant's problems (mutual profit) is the motivation for all group members to actively participate in the group work (costs). The result is a self-motivated learning group which is able to organise its own lasting learning process without requiring regular intervention or promotion.

ALS Actors

The ALS process consists of four parts:

- each participant's **problem** which is discussed as a case study
- the **customer** whose problems have to be discussed
- the **participants** who work on the customers' problems
- **the consultant** who advises and supports the group and their institution in the beginning of the process.

With the support of the group consultant and the promoting institution, the group can consult other external consultants in order to solve technical problems, if required. These consultants have to be distinguished from the group consultant insofar as they are "outsiders", i.e. they are not part of the group, but are invited to assist in the solution of specific technical problems.

The problem usually is open, incomplete and ambiguous. In many cases, further information is required in order to tackle it effectively, or there are no obvious solutions in the beginning. The problem can either be "operational" or "strategic". It should, on the one hand, represent a challenge to the group, but on the other hand, it should not go beyond the group's capabilities, knowledge and organisational capacities. In the beginning, it is the group consultant who is responsible for selecting the problem, later on the group decides on its own according to their development process.

The customer must have a specific problem. He/she must not necessarily have all the information and data available that would be required to solve in problem in a single meeting. However, the problem should have the following four characteristics:

- there is a measurable difference between the desired and the actual situation;
- there is no blue-print solution to the problem;
- the resources (time, information, know-how, money) required to achieve the desired situation are available;
- the solution can be implemented, i.e. there is no opposing coalition (staff, partners, shareholders) that can or wants to prevent the solution.

The participants can contribute their capabilities and/or knowledge to the process. It has proved to be useful to distinguish between technical and process-oriented contributions. On the **technical** level, participants can offer their professional (e.g. management, accounting) or sector-specific (e.g. meat or metal processing) knowledge and information. On the **process-oriented** level, they can assume various characters (e.g. activists, reflectors, theorists, or pragmatists, according to Kolb, Honey and Mumford¹) or roles (e.g. planners, resource investigators, co-ordinators, shapers, monitor-evaluators, completer-finishers, implementers, team-workers and specialists, according to Belbin²). The group consultant has to consider all these factors in order to effectively organise an ALS.

¹ Cf. Manual of Learning Styles Honey, P. & Mumford, A. (1986)

² Cf. Management Teams - why they succeed or fail Belbin, R.M. (1984)

The consultant's role is decisive especially in the initial phase. Typically, each group goes through various phases during its life-time:

- *forming* - this first phase, during which the group members get to know each other, is characterised by reserve, politeness and an assessment of each other's potential influence;
- *storming* - during the second phase, participants struggle for power, influence and priority within the group;
- *norming* - the group establishes rules of conduct, norms, working procedures etc.;
- *performing* - during the fourth and decisive phase, the group functions as a team and produces results.

The consultant's task is to promote this process and at the same time to avoid bottle-necks and dead ends on the way. The more advanced the group is, the less important the consultant's presence becomes. The objective of the process is to achieve an independent, functioning ALS.

ALS Tools

The learning process has to be organised in such a way that each participant gets the maximum cost-benefit effect out of it. Several tools are used to this effect.

In the **Learning Log**, each participant documents phases, ideas, contributions, discussions and his/her personal learning progress. In doing so, it is important to take down both the participants' learning process and the technical implementation processes in order to achieve the objective with maximum effectiveness (regarding the problem-solving and personality development processes) and efficiency (regarding the input of time and means). Major elements of the learning log are the persons participating in the process (in a supporting or obstructing way); the thoughts and ideas which have promoted or delayed the process; events that proved to be significant, and the participants' expectations and requirements towards the next phase of the group work.

Though the contents of the learning log are confidential, participants are free to share them with other participants or with the group consultant.

As a ALS process comprises ten to fifteen meetings, one of the participants has to assume the responsibility for organising the ALS (material, venue, initiation of contacts etc.).³

If this structure is followed consistently, it is highly probable that unconscious psychological processes transform into consciously controlled learning processes. This increased control over one's personal learning process durably increases each participant's problem-solving capacities, i.e. also when the ALS has come to an end, and thus provides the main pre-condition for sustainability.

³ A detailed description of the ALS with further-reaching practical and theoretical information will be included in the trainers' handbook to be elaborated.