

11 Teacher's notes – Volume 11 – From CP to EMS

This volume deals with the process of introducing an environmental management system on the basis of a CP project.

The teacher's notes provide a schedule for a five-day course on EMS and explain materials for this course, a template for a manual, worksheets, examples and a work plan for the introduction of a CP based EMS.

The background material can be used as described below.

Use of the background material "From CP to EMS"	
Material	Comment
Textbook	The textbook provides background information on the new topic. The trainer should be familiar with the idea of ISO 14001 and the elements of an EMS before starting the training for consultants or trainers. The textbook itself can be distributed as training material to the participants.
Examples	The examples describe the implementation of two environmental management systems on the basis of former CP projects. They describe the workflow and highlight crucial phases during the implementation. They also present the results achieved in the long term.
Exercises	<p>The exercises illustrate the practical application of the new topic.</p> <ul style="list-style-type: none"> - NASA game – This exercise is first carried out individually followed by a second round of two or three teams. The point of this exercise is to compare the individual results to the results achieved by the team, thus highlighting the advantages of team work (this exercise has already been used in Volume 2). - Basketball exercise – This exercise illustrates the use of the failure mode and effects analysis (FMEA) to examine the impacts arising from the company's processes during abnormal operation. - Chinese whispers – This exercise illustrates several aspects involved in effective communication.
Slides	<p>The slides include:</p> <ul style="list-style-type: none"> - An introduction to the elements of the standard ISO 14001; - Important information on the individual elements of a management system according to ISO 14001; - References indicating which elements required for an environmental management system according to ISO 14001 have already been accomplished during a CP project. <p>The slides can be complemented by the trainer's own charts, experiences or examples.</p>
Worksheets	<p>The worksheets follow of the systematic approach for setting up the organizational structure for a CP project.</p> <p>The worksheets deal with the following topics:</p> <ul style="list-style-type: none"> - Environmental policy; - Environmental team; - Top 20 materials; - Top 20 toxic materials; - Top 20 types of waste and emissions;

Use of the background material "From CP to EMS"	
Material	Comment
Worksheets – Continuation	<p>If Volumes 1 and 2 of the Toolkit have already been used, you can also refer to the corresponding worksheets of these Volumes.</p> <ul style="list-style-type: none"> - Map of emissions; - Legal compliance; - Environmental register; - Environmental programme; - Annual training plan; - Annual maintenance plan; - Example of a chapter of an EMS manual or procedure - Work plan for the introduction of an environmental management system.
Template for an EMS manual according to ISO 14001:2004	<p>This template illustrates the structure of a standard EMS manual, explains the objectives of the individual chapters, provides information on their implementation and refers to relevant elements which have been discussed in the previous Volumes of the UNIDO Toolkit.</p>
Example of an EMS manual	<p>This EMS manual was issued by the Australian government for its departments. It is an example of a comprehensive EMS manual and can be used for demonstration and as a reference during the training course.</p>
Checklists	<p>The checklists provide systematic guidance for the introduction of an Environment Management System into a company .</p>
Questions	<p>The questions check the participants' understanding of the information covered during the training course or workshop. Most of the information is included in the textbook, therefore links to the textbook are provided. The trainer can decide if and how to check the participants' knowledge and whether he wishes to use these questions.</p> <p>In addition, the questions can be used as a quick self-check for the trainer.</p>

Training course / workshop

The participants of a workshop or training course on "From CP to EMS" are consultants or trainers.

The following table shows an example of a five-day workshop schedule. This schedule has proved to be efficient with different target groups.

The second table comprises the suggested materials, learning objectives and success indicators for the different teaching units.



Example schedule for a training course "From CP to EMS"

Day 1				
Topic	Content	Time	Min.	Method
Registration of participants		8:30	30	
	Registration of participants		30	
Welcome		9:00	60	
	Introduction to the goal of the workshop		60	Presentation by the trainer
Introduction of the participants		10:00	60	
	Introduction of the participants, their previous experience with EMS (using Worksheet 2-4 of Volume 2)		60	Preparation of flip charts, presentations by the participants
Coffee break		11:00	15	
ISO 14001 – A roadmap		11:15	75	
	Introduction to chapters 1 and 2 of the textbook , using the set of slides , including Worksheet 11-13 , using the examples		75	Presentation by the trainer
Lunch break		12:30	60	
Initial review		13:30	60	
	Introduction to chapter 3		60	Presentation by the trainer
Coffee break		14:30	15	
Initial review				
	Application of Worksheet 11-8	14:45	90	Preparation of worksheets, presentation by the participants, discussion
End of the day		16:15		

Day 2				
Topic	Content	Time	Min.	Method
Revision of yesterday's topics		8:30	45	
	Revision of yesterday's topics		45	Discussion, support by the trainer, questions and answers
Environmental policy		9:15	60	
	Introduction to the topic		60	Presentation by the trainer
Coffee break		10:15	15	
Preparing individual environmental policies,		10:30	90	
	Exercise using Worksheet 11-1		90	Preparation on flip charts in small groups, presentations by the participants
Lunch break		12:00	60	
Risk analysis		13:00	60	
	Input on chapter 11.3.2.4		60	Presentation by the trainer
Basketball game		14:00	30	
	Exercise 11-2 to analyse potential failure modes		30	
Coffee break		14:30	30	
NASA game		15:00	60	
	Exercise 2-2 of Volume 2 to demonstrate the benefits of team work and barriers		60	Introduction to the topic by the trainer, individual evaluation, evaluation by groups, evaluation of the exercise
End of the day		16:00		



Day 3				
Topic	Content	Time	Min.	Method
Revision of yesterday's topics	Revision of yesterday's topics	8:30	45	Discussion, support by the trainer, questions and answers
Management system	Introduction to the elements of management systems, relevant documents, document control presentation of the manual template	9:15	60	Presentation by the trainer
Documentation of the management system	Introduction to the relevant worksheets and templates	10:15	30	Presentation by the trainer
Coffee break		10:45	15	
Manual and procedures,	Writing a procedure using the templates Teacher and participants select a relevant topic to write a procedure, e.g. Training (see Worksheets 11-10 and 11-12) in small groups	11:00	90	Preparation of flip charts in small groups
Lunch break		12:30	60	
Manual and procedures	Manual and procedures, presentation of results	13:30	60	Presentations by the participants
Coffee break		14:30	30	
Training, awareness and competence	Introduction to the different levels of training, identification of training needs, necessary training actions Writing a training plan	15:00	90	Presentation by the trainer
End of the day		16:30		

Day 4				
Topic	Content	Time	Min.	Method
Revision of yesterday's topics	Revision of yesterday's topics	8:30	45	Discussion, support by the trainer, questions and answers
Fundamental principles of environmental law	Introduction to the topic	9:15	60	Presentation by the trainer
Coffee break		10:15	15	
Communication and information	Exercise 11-2 Chinese whispers Presentation on the requirements of the standard	10:30	120	Exercise, discussion Presentation by the trainer
Lunch break		12:30	60	
Emergency preparedness and response	Input on the topic	13:30	30	Presentation by the trainer
Eco-controlling and continuous improvement	Input on the topic	14:00	30	
Coffee break		14:30	30	
Identification and use of indicators	Exercise 7-1 of Volume 7	15:00	90	Group work, presentation
End of the day		16:30		



Day 5				
Topic	Content	Time	Min.	Method
Revision of yesterday's topics	Revision of yesterday's topics	8:30	45	
			45	Discussion, support by the trainer, questions and answers
Corrective action, auditing and management review		9:15	60	
	Introduction to the topic		60	Presentation by the trainer
Coffee break		10:15	15	
Auditing and management review		10:30	60	
	Introduction to the topic		60	Presentation by the trainer
Management review		11:30	60	
	Continuation of Exercise 7-1 of Volume 7 : report to management, participants develop a brief management review for a company they know		60	Preparation of flip charts in small groups, presentations by the participants
Lunch break		12:30	60	
Other elements of an EMS		13:30	60	
	Maintenance, involvement of contractors, dealing with incidents		60	Presentation by the trainer
Coffee break		14:30	30	
Scheduling of EMS implementation		15:00	30	
	Scheduling of EMS implementation		30	Presentation by the trainer
Scheduling of EMS implementation and discussion of the next programme steps		15:30	60	
	Group work using Worksheet 11-13		60	Discussion and presentation
End of the day		16:30		

Explanation of the topics of the training course	
Topic	Materials/learning objectives/success indicators
ISO 14001 – A roadmap	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Slides; - Textbook. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the basic elements of an EMS and the procedure for the implementation of an EMS based on CP. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can explain the elements of an EMS and elaborate an appropriate procedure.
Initial review	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Slides; - Textbook. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the procedure for the initial review. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can explain the elements and elaborate appropriate procedures
Group work: Initial review	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Worksheets 11-3, 11-4, 11-5, 11-6. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Methodology for conducting an initial review. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can apply the worksheets.
Environmental team	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides and examples from Volume 2; - Own examples. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understand the necessity of working together as a team, environmental programme. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - The participants know how to set up a team and who to include; - Clear vision of initial and subsequent team meetings.
Group work: NASA game	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Exercise 2-2 of Volume 2. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Working together as a team leads to better results compared to working alone. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants now fully understand the importance of an environmental team.
Environmental policy	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, Exercise 2-4, examples and Worksheet 2-6 of Volume 2. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Learning about the content of an environmental policy and what makes a successful policy; - Difference between a policy and a programme. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants know the elements of an environmental policy.
Risk analysis	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook and slides. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the risks of incidents, accidents and abnormal operation; - Learning to evaluate these risks. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can identify potentially abnormal operation conditions.
Exercise: Basketball game	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Exercise 11-3 <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Learn to analyse the failure risk of a technical system. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can draw a fishbone diagram.
Environmental management system	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides, worksheets. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Detailed understanding of the elements of an EMS. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can discuss the elements of an EMS.
Documentation	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides, Worksheet 11-12. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Detailed understanding of the documentation system for an EMS.

Explanation of the topics of the training course	
Topic	Materials/learning objectives/success indicators
	<p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can discuss the elements of the documentation required by the standard
Exercise documentation	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Worksheet 11-12. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Detailed understanding of the documentation system for an EMS. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can apply the elements of the documentation required by the standard.
Training	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Detailed understanding of training needs and potential training measures. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can calculate training needs and know how to respond.
Exercise: Training plan	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides, Worksheet 11-10. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Detailed understanding of the preparation of a training plan. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can draw up a training plan.
Fundamental principles of environmental law	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides, Worksheet 11-7. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the fundamental principles of legal compliance; - Understanding relevant environmental laws; - Understanding the relevant requirements for permits. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can check the legal compliance of a company's activities.
Communication and information	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Learning to choose appropriate information channels. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can develop an appropriate information system.
Exercise Chinese whispers	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Exercise 11-3. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the mechanism of communication and develop appropriate strategies. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can develop an effective information strategy.
Eco-controlling and indicators	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbooks of Volumes 7 and 11. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Learning to identify indicators as the basis for continuous improvement. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can correlate indicators to the objectives of the companies.
Exercise: Identification and use of indicators	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook of Volume 11 and Exercise 7-1 of Volume 7. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Learning to formulate indicators for an EMS. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - Participants can formulate indicators for companies.
Scheduling the EMS implementation and discussion of the next programme steps	<p><i>Materials:</i></p> <ul style="list-style-type: none"> - Textbook, slides, Worksheet 11-13. <p><i>Learning objectives:</i></p> <ul style="list-style-type: none"> - Understanding the resources required for the individual elements. <p><i>Success indicator:</i></p> <ul style="list-style-type: none"> - participants can plan the implementation of the EMS for companies.