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European Union for Environment Regional Programme "Resource Efficient and Cleaner Production (RECP) Project

RECP Coaching Program in Armenia

Module 11. From RECP to EMS –UNIDO RECP Expert Gabriela Cordoba

Yerevan 20.08.2020

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Module 11. From RECP to EMS

- Elements of an environmental management system
- Initial environmental review
- Environmental objectives in the framework of the environmental policy
- Setting environmental targets and establishing an environmental programme

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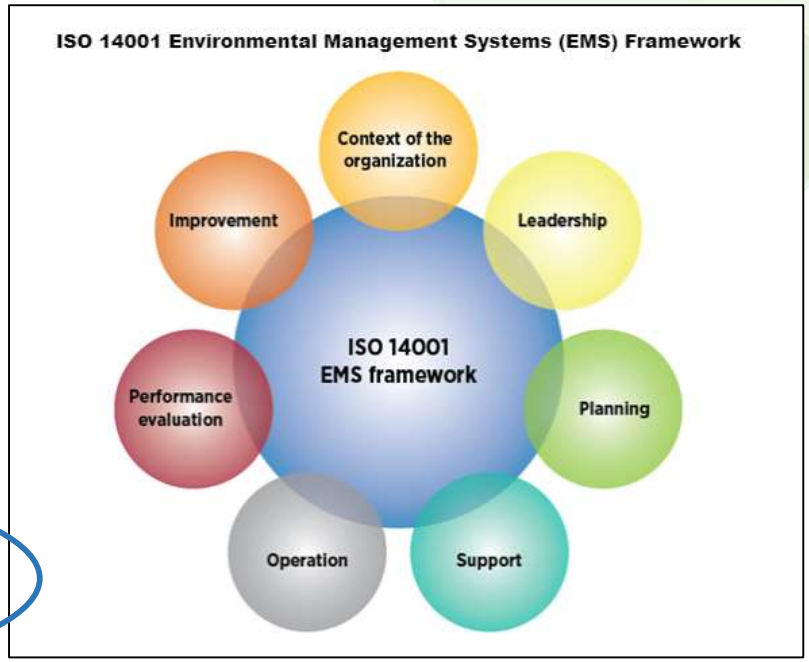
What is an EMS?

An EMS controls all activities of the organization with environmental impact through responsibilities, tasks and procedures.

- **Context of the organization**: Who are the stakeholders?
- **Leadership and Environmental policy**: Where do we want to go?
- **Planning - check environmental impacts**: Where are we?
- **Planning - Environmental programme and targets**: Where are we going? How much?
- **Support, Operation -** Environmental management system: How are we getting there?
- **Performance evaluation - Audit**: Are we on the right track?
- **Improvement: Correct and improve**



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Benefits of an EMS for a company

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ISO 14001:2015 – Continuous improvement Plan-Do-Check-Act

Plan: Understand the context of the organization, establish environmental objectives and processes to deliver results, understand risk and opportunities and determine the support required to achieve the outcomes required.

Do: Implement the processes as planned to include operational planning and control and emergency preparedness and response.

Check: Monitor, measure and evaluate environmental performance.

Act: Take actions to continually improve to include addressing non conformity

Source: ISO 14001:2015 Environmental Management System Implementation Guide. Nqa. UK

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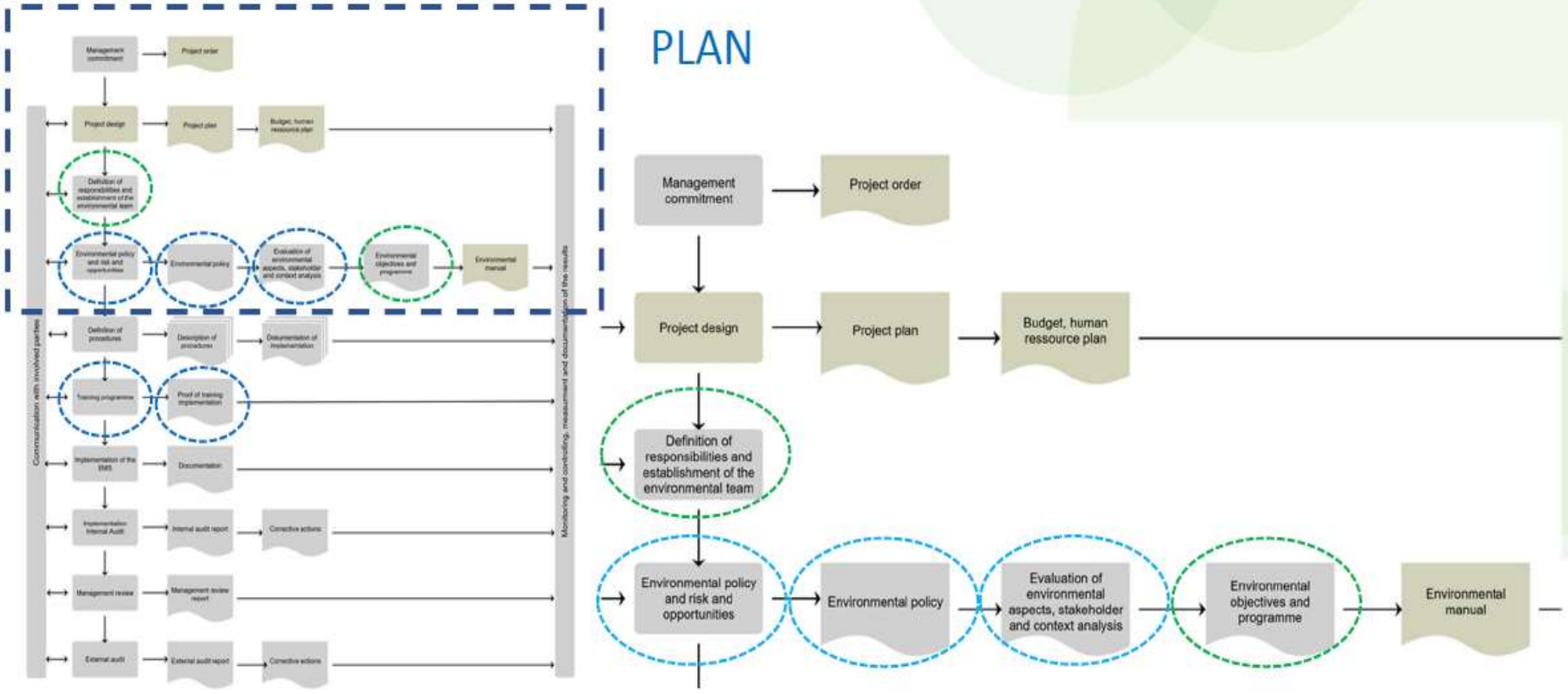
PLAN



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Environmental team

Identification, evaluation and implementation of options requires contributions from different parts of the organization

Initial environmental review

Analysis of environmental aspects and impacts

Aspect:

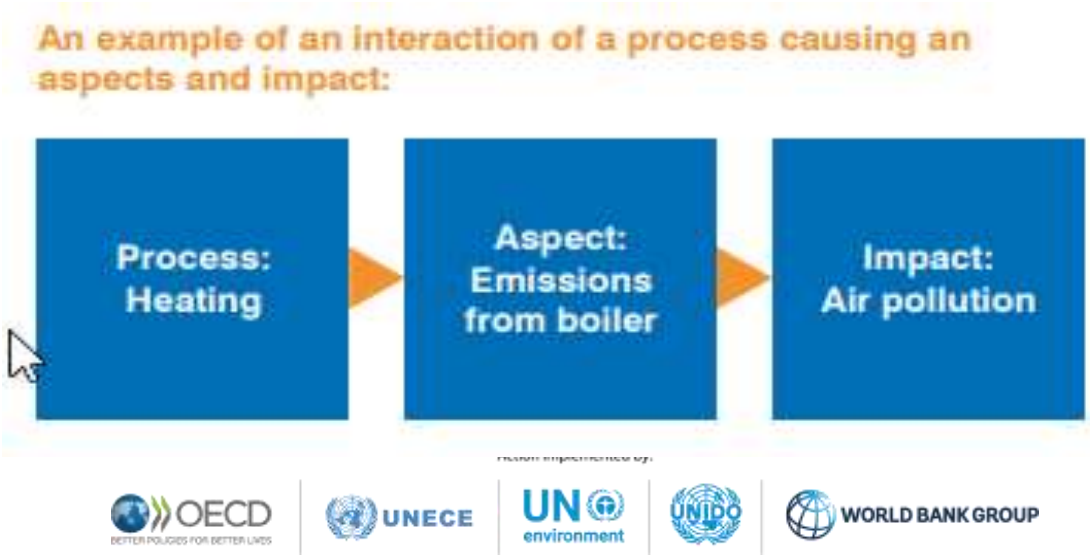
- “Element of an organization's activities or products or services that can interact with the environment.”

Impact:

- “Any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization’s environmental aspects.”

Initial environmental review

- Objectives:
  - Collection of all relevant data (material and energy flows by volume, costs and risk)
  - Evaluation of aspects according to their specific environmental importance
  - Definition of company-specific problems in the scope of the environmental policy
  - Setting priorities for possible improvement

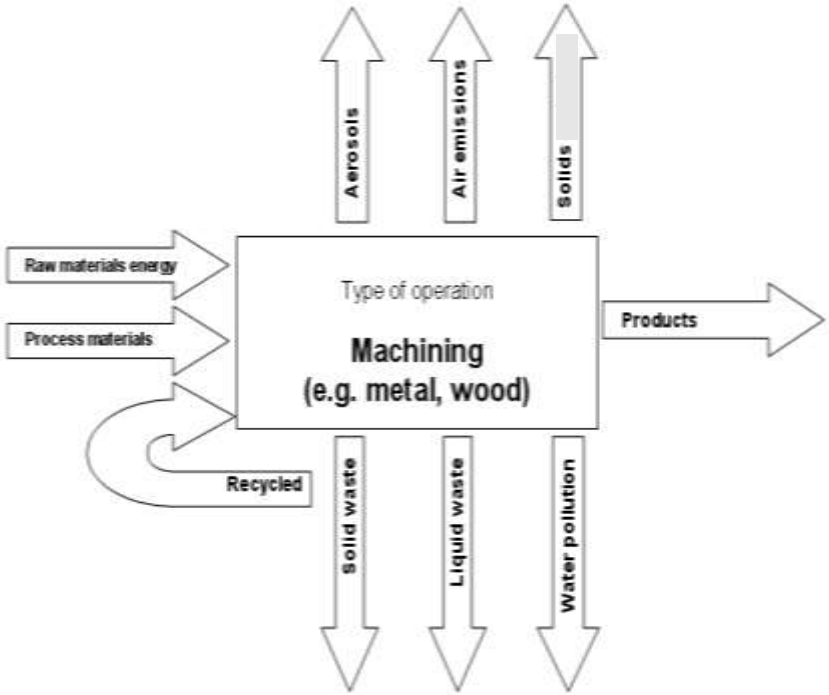


Procedure for the assessment of environmental impacts

- Site inspection
- Material and energy analysis
- Gap analysis
- Risk assessment
- Legal compliance

Assessment: Material and energy analysis

- Identification of material and energy losses due to inefficiencies
- Identification of toxic or environmentally hazardous substances
- Balance scheme



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Objective and Targets

Environmental objectives are goals that you would like to meet in the future.

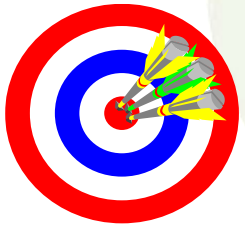
Targets are the means for providing verifiable evidence that you have actually met the objective.

Examples of environmental objectives:

- Minimize raw material use.
- Minimize releases of air contaminants to the environment.
- Comply with all applicable environmental laws.
- Use recycled products where feasible.
- Stop purchasing chemicals that contain carcinogens.

Examples of environmental targets:

- Reduce sanitary waste from routine operations by 25 % by 2014, using a 2005 baseline.
- Recycle 45 % of sanitary wastes from all operations by 2014 and 50 percent by 2020.
- Reduce fleet petroleum consumption by 20 % by 2014, using a 2000 baseline.



Targets should be

- Specific
- Measurable
- Achievable
- Realistic
- Time-related

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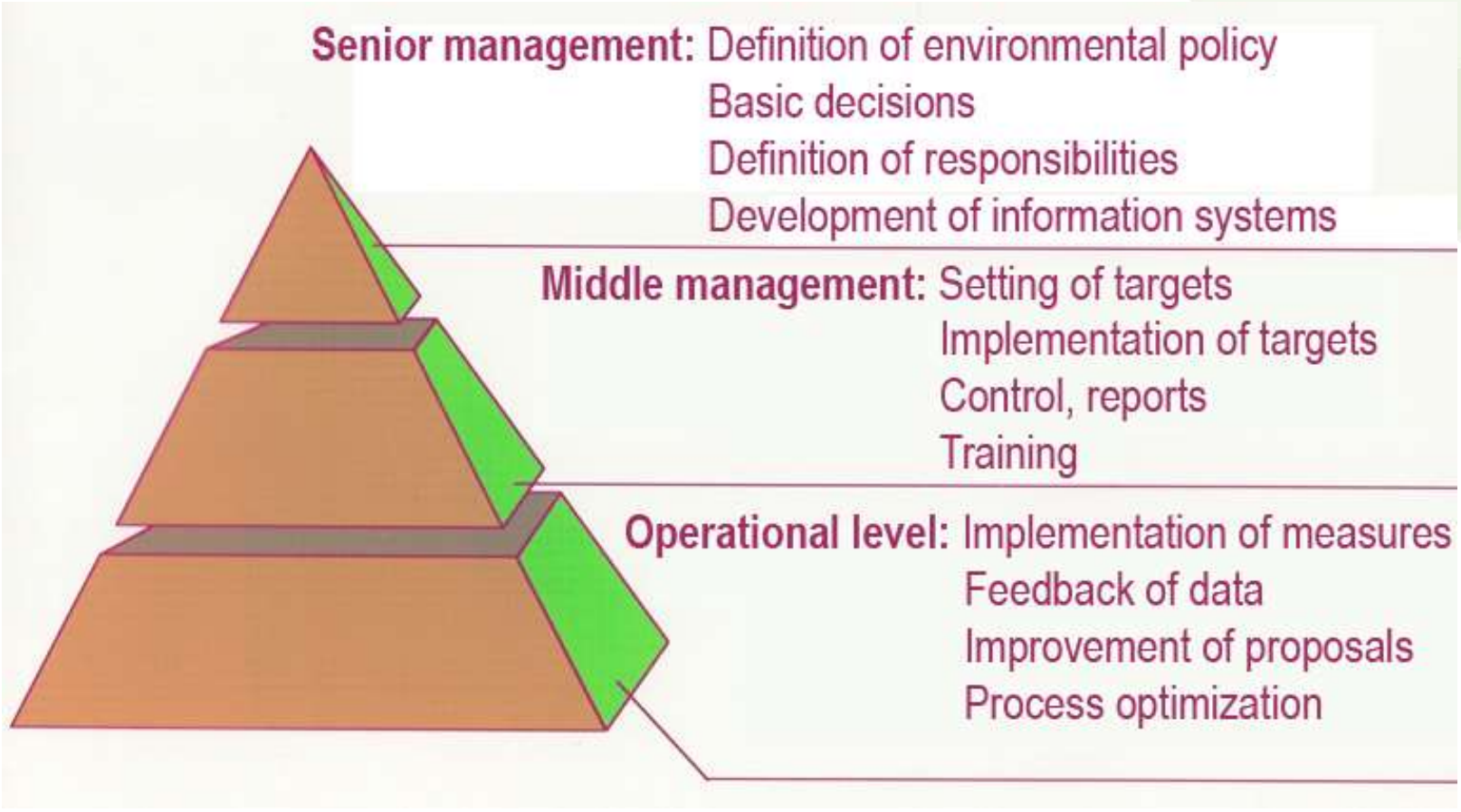
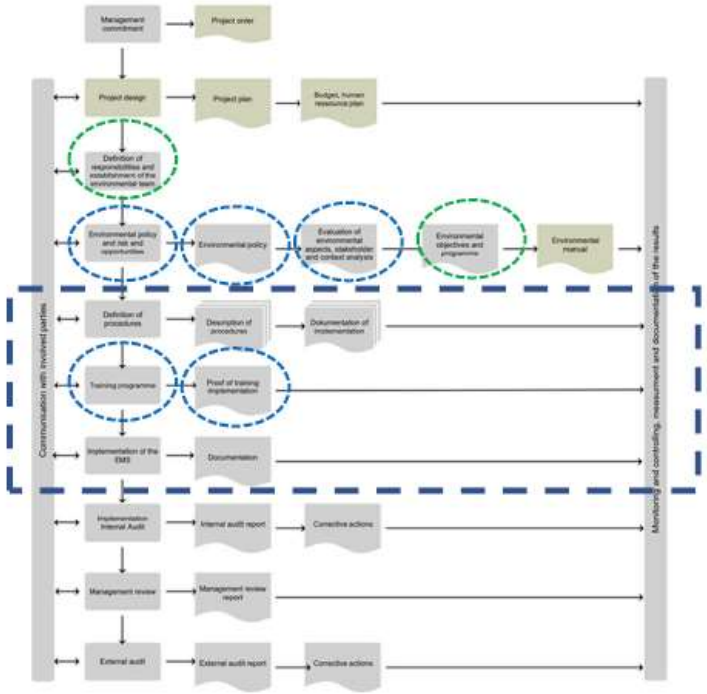
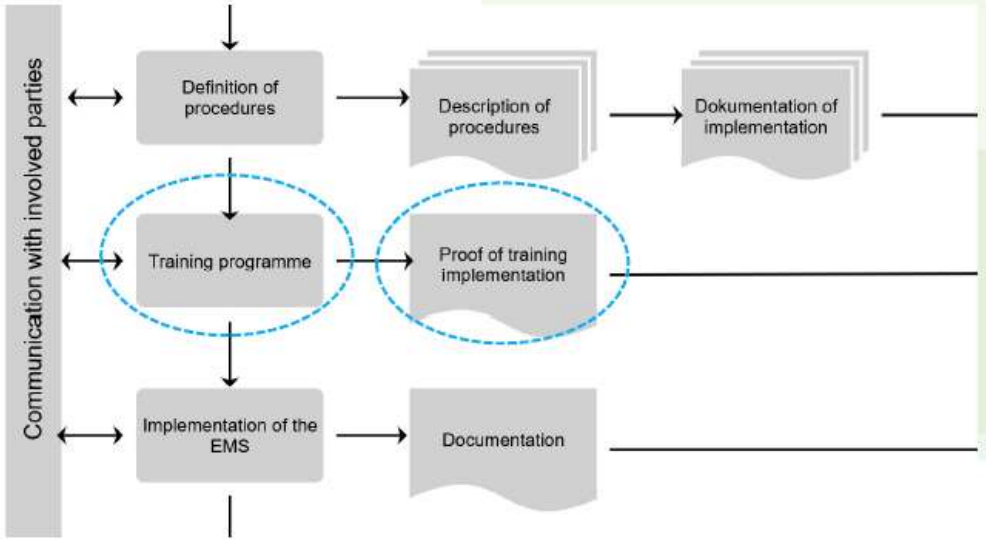

Senior management: Definition of environmental policy
Basic decisions
Definition of responsibilities
Development of information systems
Middle management: Setting of targets
Implementation of targets
Control, reports
Training
Operational level: Implementation of measures
Feedback of data
Improvement of proposals
Process optimization



DO



Opportunities for RECP service providers:

- Training program on specific subjects to support the EMS implementation.
- Technical assistance for option implementation and monitoring
- Second RECP run to achieve targets.
- Feasibilities studies to access green credits

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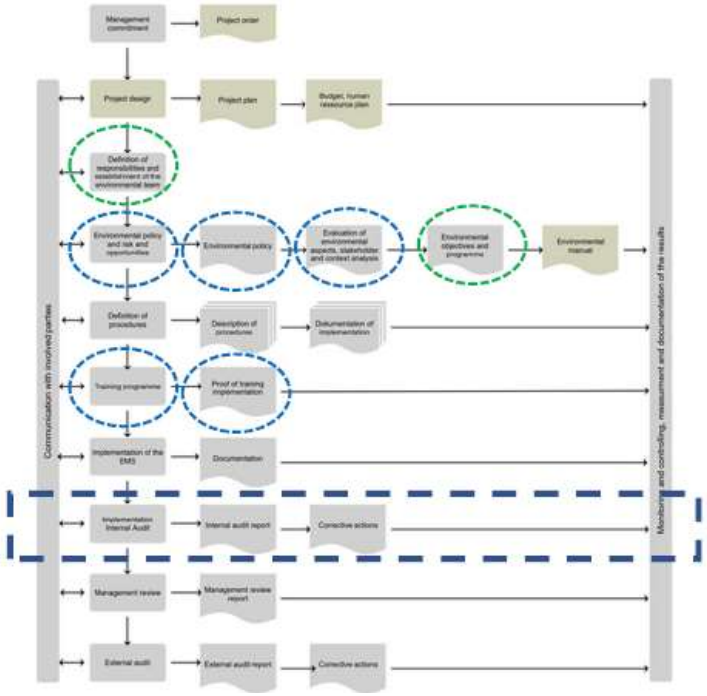

CHECK

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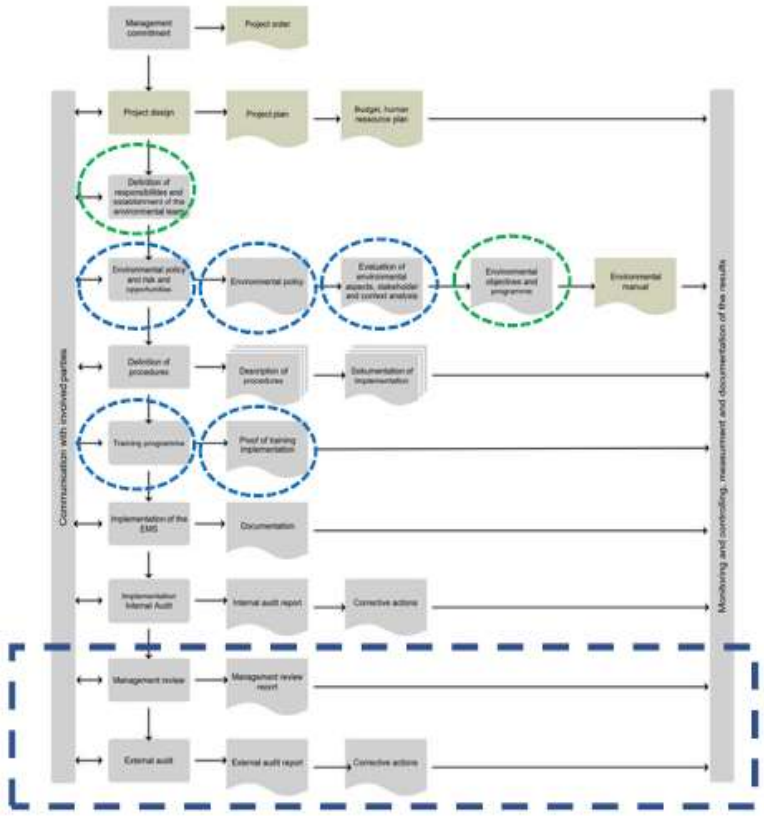
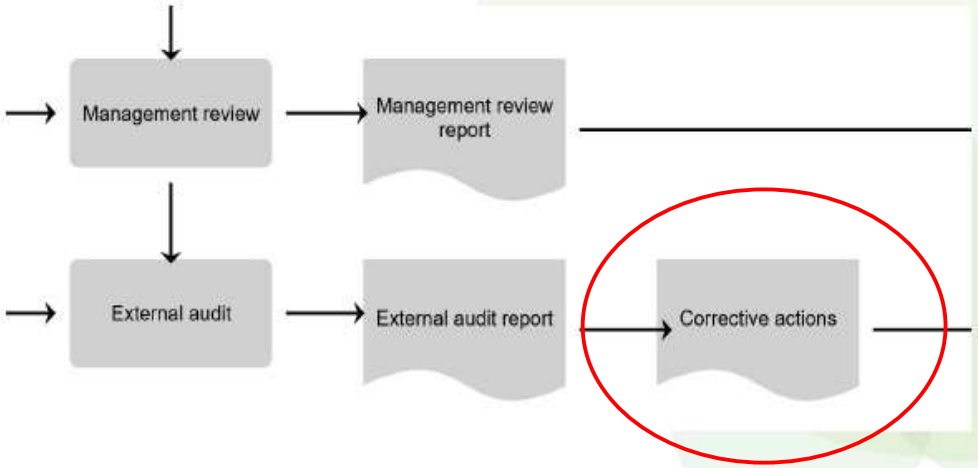


ACT



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The tasks of an RECP auditor

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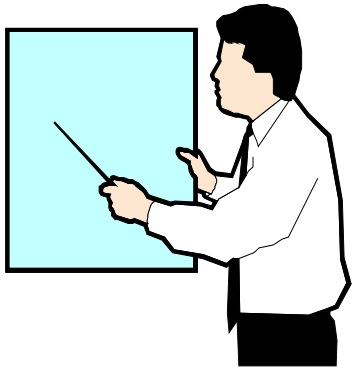
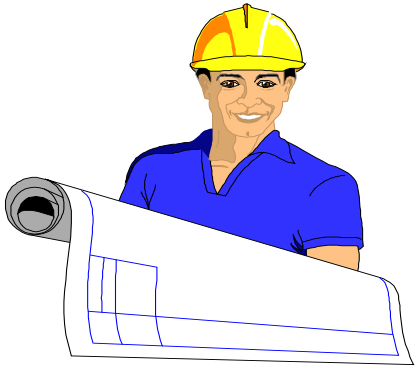


Training



?

Planning

Option identification

Continuous support

Learning

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Supporting information from the EMS online training

- Sample of Environmental Management System Manual (table of content)
- Examples of EMS manuals:
  - CS Energy
  - Jamaica Social Investment fund.
- EMS Questionnaire
- GEMI ISO 14001-2015 self assessment check list

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Available tools to support RECP assessments and reporting process

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Supporting tools available for the RECP assessment at company level

- Set of factsheets aimed at supporting experts preparation for developing the RECP assessment.
- Supporting tools provide hints and methodologies to carry out some of the key steps of the RECP assessment cycle.
- Not obligatory as they are not Deliverables, they are methodological support that contributes to successful results.

ST- 1 Organization
ST-2 Pre-assessment checklist
ST-3 Environmental policy drafting
ST-4 Root cause diagnosis
ST-5 Checklist for RECP measures generation

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Supporting tools available for the RECP assessment at company level

ST1 - Organization: Factsheet that provides an overview of relevant elements to be considered during the planning and organization phase of an RECP assessment:

- How to conduct a kick-off meeting with the top management.
- Formal delegation of the RECP team.
- Template for preparing the assessment work plan.
- Key meetings to hold with the company RECP team.
- Definition of training and awareness-raising plan for the company's staff

Our project does not have group training activities!

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Resource Efficient and Cleaner Production in-plant-assessment – General Work Plan

Company: XXX (name of the company)

No.	Activity description	Responsible	Expected Deadline	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Activity (main) XXXXX…																										
	Sub - activity (if deemed necessary)																										
	XXXX…																										
	XXXX…																										
	XXXX…																										
	The following are some milestones to be included in the work plan:																										
	Kick-off meeting (Project's start in the company)																										
	Initial walkthrough																										
	RECP training workshop - cumulative session # 1																										
	Pre-assessment																										
	Sub - activity (if deemed necessary)																										
	XXXX…																										
	XXXX…																										
	Awareness raising seminars (all employees)																										
	RECP training workshop - cumulative session # 2																										
	1st in-house working meeting: Validation of Priority Flows and Focus Areas based on pre-assessment results																										
	Elaboration/Revision of the RECP Policy Proposal																										
	2nd in-house working meeting: Drafting /revising the Environmental Policy																										

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Relevant meetings with the RECP Team

1st in-house working meeting:

Validation of Priority Flows and Focus Areas based on pre-assessment results

2nd in-house working meeting:

Drafting /revising the Environmental Policy

3rd in-house training/working meeting:

Discussion of findings and preliminary option generation

4th in-house working meeting:

Presentation and validation of the RECP assessment draft final report with the company team

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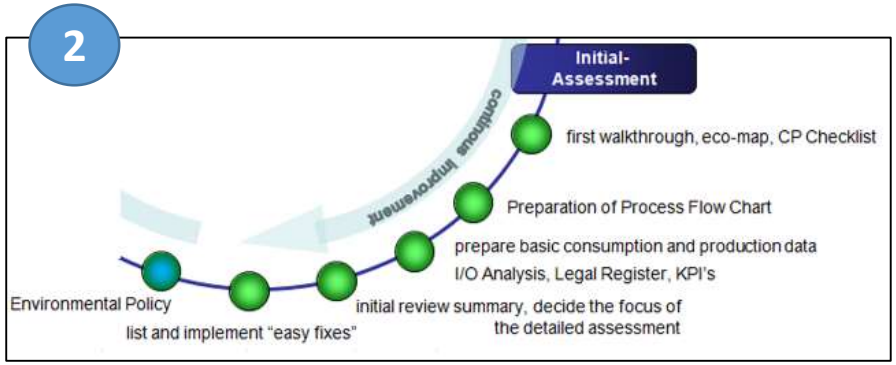
Supporting tools available for the RECP assessment at company level



- ❑ **ST2 – Pre-assessment checklist**
- ❑ **ST-3 Environmental policy drafting**

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ST2 – Pre-assessment checklist: provide a framework of possible questions and remarks that help advisors to understand the processes and identify where to look for areas with improvement potential or control requirements during the first walkthrough.

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RESOURCE EFFICIENT AND CLEANER PRODUCTION IN-PLANT-ASSESSMENT

PRE-ASSESSMENT CHECKLIST

Date of visit	
Company name	
Advisors	

Please select the sections of the check list that apply to the company process and facility. Remove those not useful for each case. Use "Observations" column for notes and for those questions that do not correspond to a YES/NO answers.

A – Materials

Questions	Yes	No	Observations
RAW AND AUXILIARY MATERIALS			
Make a list of main raw and auxiliary materials used in the process.			
Are materials measured before use them in the production process? Are there procedures to control consumption and reduce losses?			
Is there any automatic control for dosing of materials? In what processes?			
Does the company calibrate measuring equipment?			
Are there records of real consumption of materials in a			

Recommendation:
Go through the checklist and select those questions and categories that might apply to the company's production process to prepare your own checklist!

Categories of the checklist:

1) Materials:
- RAW AND AUXILIARY MATERIALS
- PACKAGING
- OPERATING MATERIALS
- CHEMICAL MANAGEMENT

3) Products and by-products

4) Waste:
- WASTE GENERATION
- HAZARDOUS AND TOXIC WASTES
- WASTE TREATMENT AND DISPOSAL

4) Water:
- METERING
- CLEANING AND RINSING
- COOLING
- BOILER
- LAUNDRY
- TOILETS/URINALS/SHOWERS

5) Wastewater

6) Electricity:
- AIR COMPRESSOR
- COMPRESSED AIR SYSTEM
- REFRIGERATION UNITS
- COOLING ROOMS
- AIR CONDITIONING
- VENTILATION
- OTHER MOTORS
- LIGHTING

7) Thermal energy:
- BOILER
- STEAM DISTRIBUTION SYSTEM

ST2

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ST-3 Environmental policy drafting: Companies could either have an environment-related or quality system-related policy, or be in an early stage without any development of a management system in these subjects. The objective of this tool is to provide elements to guide the environmental policy definition in both cases.

SECTION A – Methodology for Drafting an Environmental Policy Statement

Significance	1st step	2nd step		3rd step	Result
	Is there a legal requirement?	Frequency	Hazardous characteristics	Is it relevant for other compliance requirements?	
Is the environmental aspect significant?	Yes	High	High	N/A	Yes, highly significant
		High	Medium	N/A	Yes, highly significant
		High	Low	High	Yes, highly significant
		High	Low	Medium	Yes
		High	Low	Low	No
		Medium	High	N/A	Yes, highly significant
		Medium	Medium	High	Yes, highly significant
		Medium	Medium	Medium	Yes
		Medium	Medium	Low	Yes
		Medium	Low	High	Yes
		Medium	Low	Medium	Yes
		Medium	Low	Low	No
		Low	High	High	Yes, highly significant
		Low	High	Medium	Yes
		Low	High	Low	Yes
		Low	Medium	High	Yes
		Low	Medium	Medium	No
		Low	Medium	Low	No
		Low	Low	N/A	No
		Low	Low	N/A	No
		Low	Low	N/A	No
	No	N/A	N/A	N/A	No

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ST-3 Environmental policy drafting: Companies could either have an environment-related or quality system-related policy, or be in an early stage without any development of a management system in these subjects. The objective of this tool is to provide elements to guide the environmental policy definition in both cases.

SECTION A – Methodology for Drafting an Environmental Policy Statement

SECTION B – Revising An Environmental Policy Statement

- **Stakeholder analysis**
- **Check list for revising** or upgrading **an existing policy document** based on ISO 14001 principals

Recommendation:
Try to engage the company team in the elaboration or updating of their environmental policy to incorporate RECP principles. The ST3 tool can be hand over to the team for their own application. RECP inclusion as part of the company's business strategy is relevant for after-project continuity of RECP practices.

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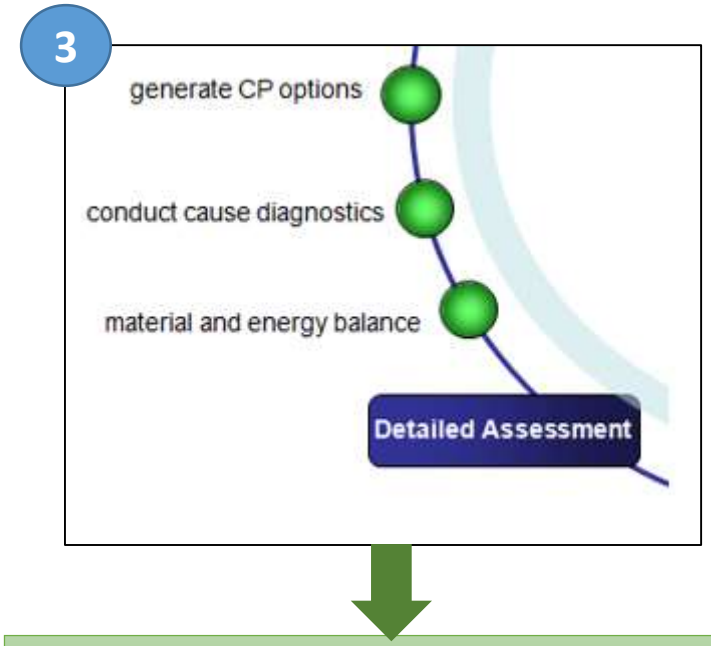
Supporting tools available for the RECP assessment at company level



- ❑ **ST-4 Root cause diagnosis**
- ❑ **ST-5 Check list for RECP measures**

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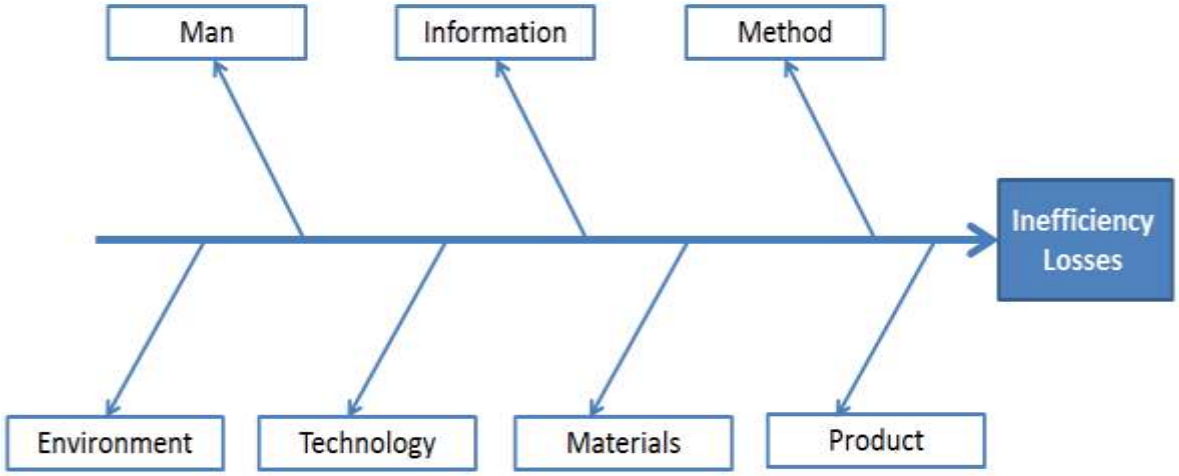
Supporting tools available for the RECP assessment at company level

ST-4 Root cause diagnosis: This tool outlines methodological steps for conducting a root cause analysis (cause-effect).

Recommendation
Advisors can lead brainstorming sessions during in-company meetings (one or more sessions according to the company size and context).



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ST-5 Check list for RECP measures: questions or statements aimed at generating ideas for change and improvement of process.

Recommendation

Try to apply principles listed in the checklist to processes/areas under evaluation to generate new ideas. If possible, select some principles and run this exercise with the company team in brainstorming sessions.

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UNIDO	SUPPORTING TOOLS FOR RECP ASSESSMENT SERVICES
Tool # 5	Checklist for RECP measures generation
RECP assessment phase	Phase C – Detailed Assessment

Substitution of materials

Non-toxic or less toxic alternatives are available for many materials commonly used in manufacturing. Their utilization reduces the environmental impacts of the waste generated and can cut waste disposal costs. Examine the materials processed in a company and try to:

- Eliminate toxic materials;
- Reduce toxic materials;
- Substitute them by less toxic materials or materials that can be re-used.

1. Can the company eliminate materials which are not essential to the process or quality?
2. Can you use the same material or chemical for as many products and processes as possible to increase the potential for internal recycling?

Process change

A change in attitude can result in a considerable reduction of waste and cost savings. You can investigate a number of modifications to processes or equipment.

Redesign the product

9. Modify the product size and shape to reduce the quantity of materials used.
10. Redesign the product or change the materials used to generate less waste. Ensure that the waste can be reused or recycled, or that it is less environmentally harmful or expensive to dispose of.

ROUP

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Technical references

Tools related to RECP methodology and in-plant-assessment reporting were elaborated based on the RECP cycle and concepts using the following sources published by UNIDO and other partners:

- **UNIDO CP toolkit**
- **Industrial training handbook: PRE-SME – Promoting Resource Efficiency in Small & Medium Sized Enterprises**. UNEP – UNIDO, 2010
- **TEST guidelines: An integrated approach for Sustainable Production in the manufacturing sector**. UNIDO, Switch MED, EU. 2019.

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Report templates defined for the project

- General templates to report the RECP assessment and its supporting documentation.
- Templates correspond to the project Deliverables at company level.
- Templates are comprehensive to cover all potential resources streams in industry. So, **they have to be adapted to each company case** by the experts as not all resources are analyzed at the same depth.

Please, adapt templates and formats to each company context, technical scope defined for the specific RECP assessment, and the expert criteria.

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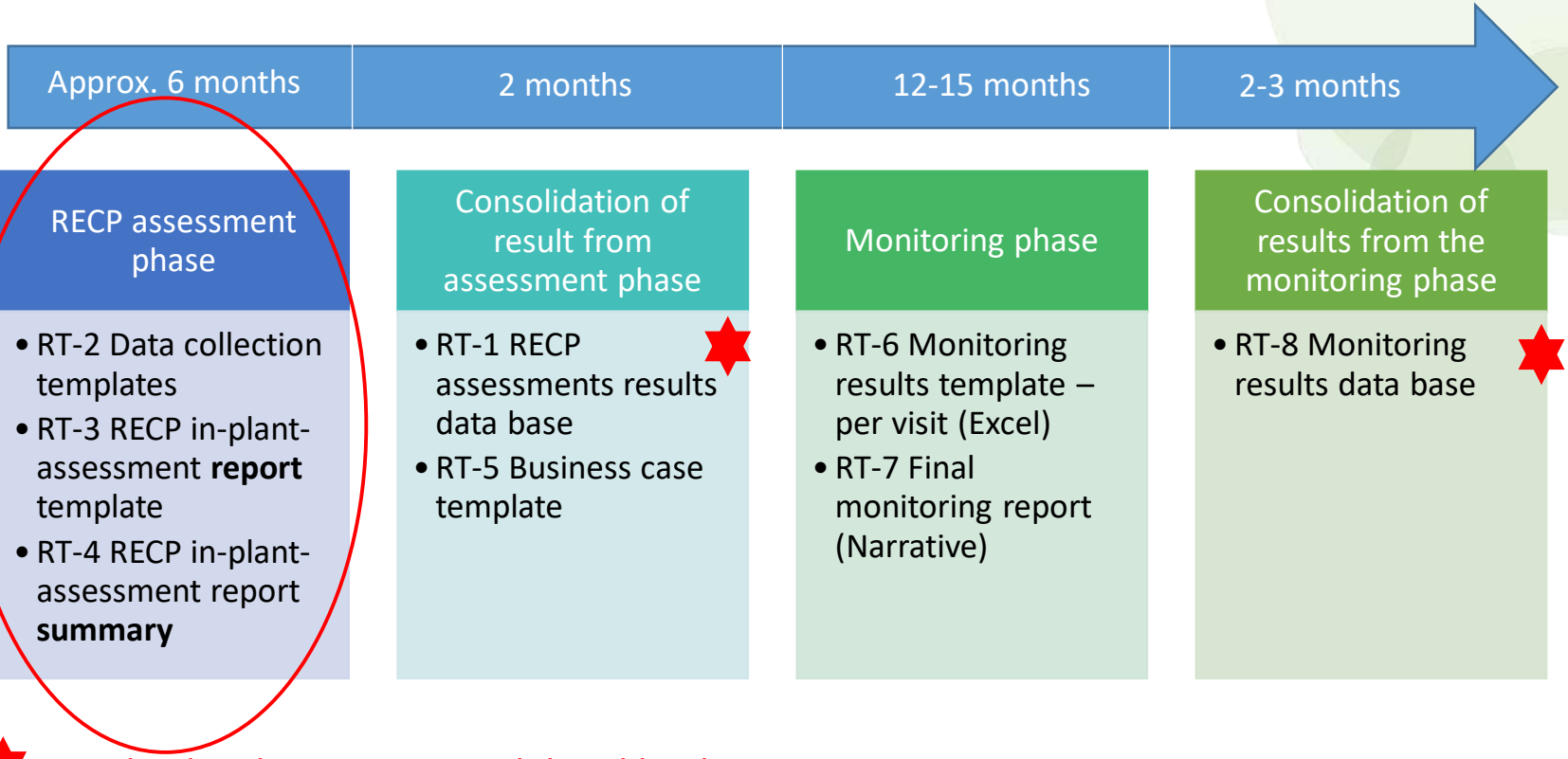
Report templates defined for the project



Results data bases are consolidated by the NIP

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RECP assessment phase

RT-2 Data collection template

- Excel tool aimed at organizing data collection of materials, water and energy consumptions at company level (input/output)
- It provides a sequence of tables to collect data following initial assessment steps and tables to organize material and water balance data, and energy users inventories for further analysis.
- Specific indicators on Energy tariff and CO2 emissions have been included for Armenia.

Filling-in of the data should be adapted to each company case, as not all tables will suit all process. However, the tool aims to give the overview on the main steps of the assessment data collection as guideline.

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RT-2 Data collection template - content

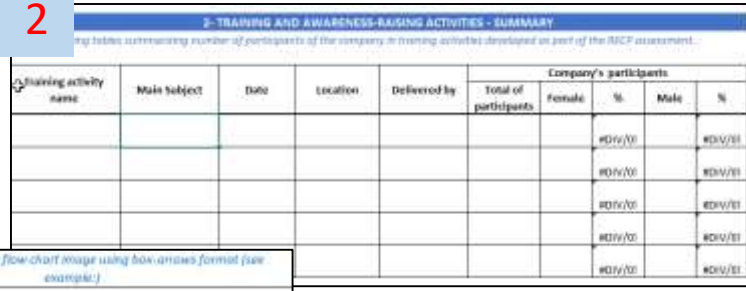
1. Company profile	It collects basic information of the company such as sector, main products, size, employees, markets, and certifications, in order to provide the company context. Based on ISIC v4.
2. Training log	It presents a summary of the training activities where the company´s staff has participated during the RECP project.
3. Production process and areas	Draw here the process flow chart, identification of inputs and outputs along the process, the company areas, and its layout. Flow chart and areas are only expected for those process and facilities that are part of the RECP assessment.

1

1- COMPANY PROFILE

Concept	Company data
Company name	
Commercial name	
Site name	
Sector	"2394","Manufacture of cement, lime and plaster"
Products	
Site address	

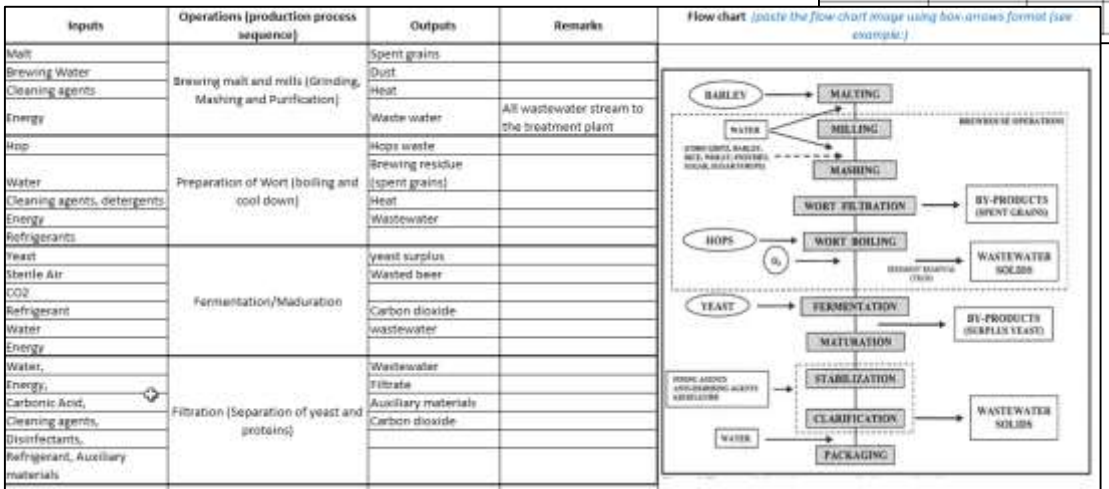
2



2- TRAINING AND AWARENESS-RAISING ACTIVITIES - SUMMARY

Training activity name	Main Subject	Date	Location	Delivered by	Company's participants: Total of participants	Female	%	Male	%
							#DIV/0!		#DIV/0!
							#DIV/0!		#DIV/0!
							#DIV/0!		#DIV/0!
							#DIV/0!		#DIV/0!

3



Inputs	Operations (production process sequence)	Outputs	Remarks
Malt	Brewing malt and mills (Grinding, Mashing and Purification)	Spent grains	
Brewing Water		Dust	
Cleaning agents		Heat	
Energy		Waste water	All wastewater stream to the treatment plant
Hop	Preparation of Wort (boiling and cool down)	Hops waste	
Water		Brewing residue (spent grains)	
Cleaning agents, detergents		Heat	
Energy		Wastewater	
Refrigerants			
Yeast	Fermentation/Maduration	yeast surplus	
Sterile Air		Wasted beer	
CO2			
Refrigerant		Carbon dioxide	
Water		wastewater	
Energy			
Water,	Filtration (Separation of yeast and proteins)	Wastewater	
Energy,		Filtrate	
Carbonic Acid,		Auxiliary materials	
Cleaning agents,		Carbon dioxide	
Disinfectants,			
Refrigerant, Auxiliary materials			

Flow chart (paste the flow chart image using box-arrows format (see example:))

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4. I-O Analysis	This worksheet collects physical and economic values of all inputs and outputs at the company system boundary as an important step of the pre-assessment phase. All material and energy streams and its costs are recorded from the company book-keeping, as inputs (purchases of flows that entrance to the company) and outputs (management or treatment costs of waste and emissions that leave the company). The tab facilitates the identification of the Non-Product Outputs (NPOs).

4- INPUT AND OUTPUT ANALYSIS AT COMPANY SYSTEM BOUNDARY

4.1- Input and output identification - physical and monetary units

INPUTS	A- Amount (Ton/year or what indicate per row)	B- Cost (EUR/Year)	C- % as Non-product Output (NPO) [% of the Amount]	D - NPO cost (for materials & energy [B x C]	E - Source of information (where data is recorded)
1. INPUTS (material and energy) AND NON-PRODUCT OUTPUTS (NPO) COSTS					
1.1. Raw and Auxiliary Materials					
Malt	4,000	1,000,000	20%	200,000.00	Accountig records (5100) % of NPO estimated by production manager
Hop	500	120,000	20%	24,000.00	Accountig records (5101)
Burst rice	200	120,200	15%	18,030.00	Accountig records (5102)
Auxiliary materials	100	12,150	2%	243.00	Accountig records (5110)
CO2 Purchase		100,000		-	Accountig records (5111)
				-	
				-	
				-	
				-	
Subtotal	**4,800**	**1,352,350.00**		**242273**	
1.2. Packaging Materials					
Bottle beer caps		80,000	5%	4,000.00	Accountig records, no amounts are recorded / 5301
Labels Beer		100,000	7%	7,000.00	5310
Label plus		15,000	7%	1,050.00	5320

OUTPUTS	F -Amount (Ton/year or what indicate per row)	G - Cost (EUR/year)	H- Source of information (where data is recorded)
2. PRODUCT OUTPUTS: Column G for Product and By-product categories refers to the total cost of sale of the product. This value is useful to establish the relevance of NPO costs in the summary table below. If the company cannot provide this information, please let it empty			
2.1. Products			
Beer (in m3)	26,000	-4,000,000	Total production cost from financial statistics and calculation sheet for production costs
Subtotal	**26,000**	**(4,000,000.00)**	
2.2. By-Products			
brewing residue for agricultural composting	280	-3,500	Revenues. production statistics
semi-solid mineral silt for agricultural composting	240	0	Delivery free of charge. Production statistics
wet draff for agricultural composting	5,500	-35,000	Revenues. production statistics
Subtotal	**6020**	**(38,500)**	
3. WASTE AND EMISSIONS: Column G for 3. WASTE AND EMISSIONS category refers to management costs of these emissions such as final treatment costs (operation of machines, personal, additives), disposal fee, transporation, etc.			
3.1. Waste			
Total non hazardous waste	20		waste recording system
Waste for Recycling	450		waste recording system

4.2 - Summary

Category	EUR (unless otherwise specified)	Percentage distribution %
1. NON-PRODUCT OUTPUTS (NPO) COSTS: Material and energy inputs		
1.1. Raw and Auxiliary Materials	242,273.00	16%
1.2. Packaging Materials	216,100.00	14%
1.3. Operating Materials	321,000.00	21%
1.4. Water (use m3)	50,000.00	3%
1.5. Energy (use kWh)	696,300.00	46%
3. WASTE AND EMISSIONS MANAGEMENT COSTS		
3.1. Waste	0	0%
3.2. Hazardous Waste	0	0%
3.3. Waste Water (use m3)	0	0%
3.4. Air Emissions	0	0%
Total	**1,525,673.00**	**100%**

4.3 - Overview at company system boundary

Concept	EUR	Tons	Indicators
Cost of sale of the products	-€ 4,000,000		
Costs of total Inputs	€ 2,833,850		
Costs of INPUT in % of the cost of sale			**-71%**
Total Inputs in tons (without energy)		235,342	
Total Output in tons (without emissions)		128,830	
Total material outputs (product + waste+wastewater) [kg] in %			**55%**
Missing tons in % of INPUT			**45%**
Inputs (without energy and water)		5,342	
Outputs (without emissions and wastewater)		28,977	
Total Material inputs vs. Total material outputs (product + waste) [kg] in %			**542%**
Missing tons in % INPUT			**-442%**

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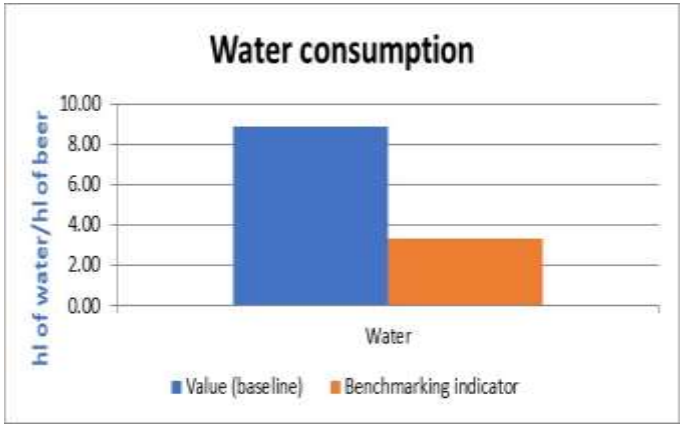
5. KPI	Calculation of Key Performance Indicators selected by the advisory team, based on quantification of Inputs and Outputs recorded in Tab 4. The worksheet also includes a comparison with benchmarking indicators that the advisory team identifies to estimate the overall potential of improvement.

Key Performance Indicator (KPI) definition	Units (related to production values)	Value (baseline)	Benchmarking indicator	Information Source*	% improvement potential**
Resource use indicators					
Materials					
Malt	kg/hl of beer	15.38		no available	
Hop	kg/hl of beer	1.92		no available	
Water					
Water	hl of water/hl of beer	8.85	3.3	F RAMUKHWATHO, A SEETAL, & H PIENAAR. WRC Report No. TT 676/16. December 2016	63%
Energy					
Electricity	kWh/hl of beer	10.4		no available	
Thermal energy	kWh/hl of beer	to be calculated			
Total	kWh/hl of beer	10.4	18.0	F RAMUKHWATHO, A SEETAL, & H PIENAAR. WRC Report No. TT 676/16. December 2016	Need to include thermal energy to compare
Pollution intensity indicators					
Waste					
Solid waste non-hazardous	kg of waste/hl of beer	1.7308		no available	
Total		1.7308			
Wastewater					
wastewater	m3/hl of beer	0.37		no available	



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6. Production	It collects production values detailed by months and products that could be needed for the rest of the analysis. Recording period of production values could be different in each company, so the table should be updated.
7. Material Balance	This worksheet presents the detailed material balance of priority areas or processes selected by the advisor team. Data to be included in these tables results from more in-depth researching and monitoring developed during the assessment to calculate material flows where needed. Therefore, other calculation sources elaborated by the team will support this information.
8. Water Balance	This worksheet follows the same approach that tab 7, but for water flows, to submit the water balance where applicable.

7

INPUTS		Operation (s)/area (s)	OUTPUT	
Materials	Amount (ton/year)		Products/wastes	Amount (ton/year)
Total	0		Total	0
Unbalance (uncontrolled material flow)	0			

8

8.2 - General water input

No.	Water input	Quantity	Unit	Unit price (EUR/m3)	Total cost (EUR/year)	Data source/notes
I-1	Well water	272 000	m³			Book-keeping, water meter #X
n...			*m³*			
	Total	**272000**			**0**	

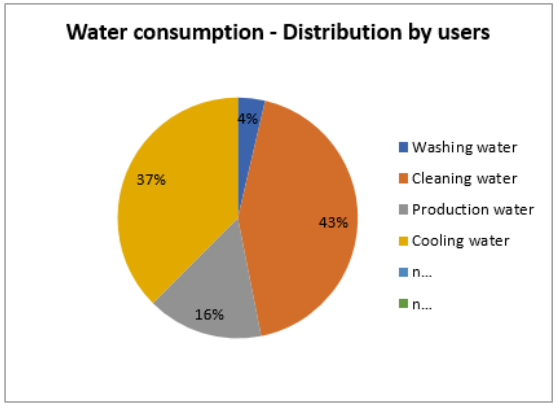
8.3 - Water users

Water type*	Area	Water consumer	Quantity	Unit	Total cost (EUR/year)**	Data source/notes
Well water	Reception area	Washing water	10000	m³		Meter
		Cleaning water	117500	m³		Calculated, annex #XX
	Production	Production water	42500	m³		Meter #XX
		Cooling water	102000	m³		Meter #XX
		n...		*m³*		*Meter #XX*
n...		*n...*		*m³*		
		Total:	**272000**		**0**	

** if applies*

*** using purchasing cost of water if applicable*

8.4 - Outputs



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9. Energy Consumption and GHG	It collects the energy consumption by energy sources, bills features, and the CO2 emission estimates associated with energy sources.
10. Electricity Users	It presents the distribution of electricity consumption and its calculation basis by users to identify priority systems for more detailed energy efficiency analysis.
11. Thermic energy users	It presents the distribution of thermal energy production by sources, as well as thermal energy consumption by heating users, to identify priority systems for more detailed energy efficiency analysis.

9 Specific indicators for Armenia

Table 1. Tariffs set by the PSRC to consumer groups.

PSRC Decision N42[N 23.12.2016 and N77[N 27.12.2017 (exchange rate is assumed 480 AMD/USD)

N	Final consumer group	Tariff (VAT included)	
		USD cents/kWh	AMD/kWh
1.	110 kV voltage-fed consumers		
	Daytime tariff	7.0	33.48
	Nighttime tariff	6.1	29.48
2.	35 kV voltage-fed consumers		
	Daytime tariff	7.5	35.98
	Nighttime tariff	6.7	31.98
3.	6(10) kV voltage-fed consumers		
	Daytime tariff	8.7	41.98
	Nighttime tariff	6.7	31.98
4.	0.38 kV voltage-fed consumers (excluding mentioned in point 5)		
	Daytime tariff	9.4	44.98
	Nighttime tariff	7.3	34.98
5.	0.38 kV voltage-fed consumers (Socially vulnerable consumers based on RA Government decision N 1122 03.11.2016)		
	Daytime tariff	6.2	29.99
	Nighttime tariff	4.2	19.99

10 Electric user inventory

Level of detail to obtain energy distribution will depend on each case

0.1 Electricity consumption by users

The following table presents the inventory of electric machinery and its energy consumption estimated during the assessment (baseline). Please see INSTRUCTION box below.

A	B	C	D	E	F	G	H	I		J	K	L	M	N
Building/Area	Department or process	Operation	Category	Equipment/machine	Code (if applicable)	Years of operation	Mode of Operation	Power Consumption		Number of Units	Operational Hours [hours/day]	Duty Cycle per day [%]	Working days/year	Energy Consumption [kWh/year]
								[HP]	[KWH]					
			Fans						5	4	8	100%	250	40,000
			Motors						15	1	10	100%	250	37,500
			Lighting						0.36	50	10	90%	250	1[illegible]
														0
														0

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RT-3 RECP in-plant-assessment report template

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The template comes with some examples and tables extracted from RT2-Data collection templates to illustrate the content of some headings. This should be updated to the analysis selected by each expert team for the company under assessment

List of figures

[Number figures accordingly and add table of contents function]

List of tables

[Number tables accordingly and add table of contents function]

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Other reporting tools

RT-5 Business case template → Summarize results obtained by companies for communication purpose. It includes gathering interviews briefing to document perceptions of participant companies.

RT-6 Monitoring results template – per visit (Excel) → Excel format that collects progress on the RECP action plan implementation. It takes the plan from the assessment report to document real savings, investments, barriers, challenges, etc. It will be updated after each monitoring visit (every 6 months approx.)

RT-7 Final monitoring report (Narrative) → Narrative report of the final monitoring phase, documenting level of implementation, final results, lessons learned, barriers and next steps.

The Happy Beer Factory

Group 1:

Use the Input/Output Analysis table (***4. I-O Analysis***) of the **"RT2 - Data collection template"** to organize information and take notes on main observation and conclusions

Group # 2:

Use tab ***5. KPI*** of the **"RT2 - Data collection template"** to identify the key performance indicators that can be relevant for this company:

- List the indicators needed and identify the measurements units
- Calculate those for which the information is available from the overview provided in Exercise 1
- Select the benchmarking indicator that can be used
- Identify % of potential improvement based on comparing current KPI and benchmarking indicators

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THANK YOU

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