


RECP Training

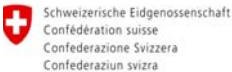





1. RECP Concept & Practice
2. RECP Assessment
3. Motivation, Commitment & Team
4. RECP Indicators
5. Initial Assessment
6. Detailed Assessment


September 2014 Module 4: RECP Indicators 1

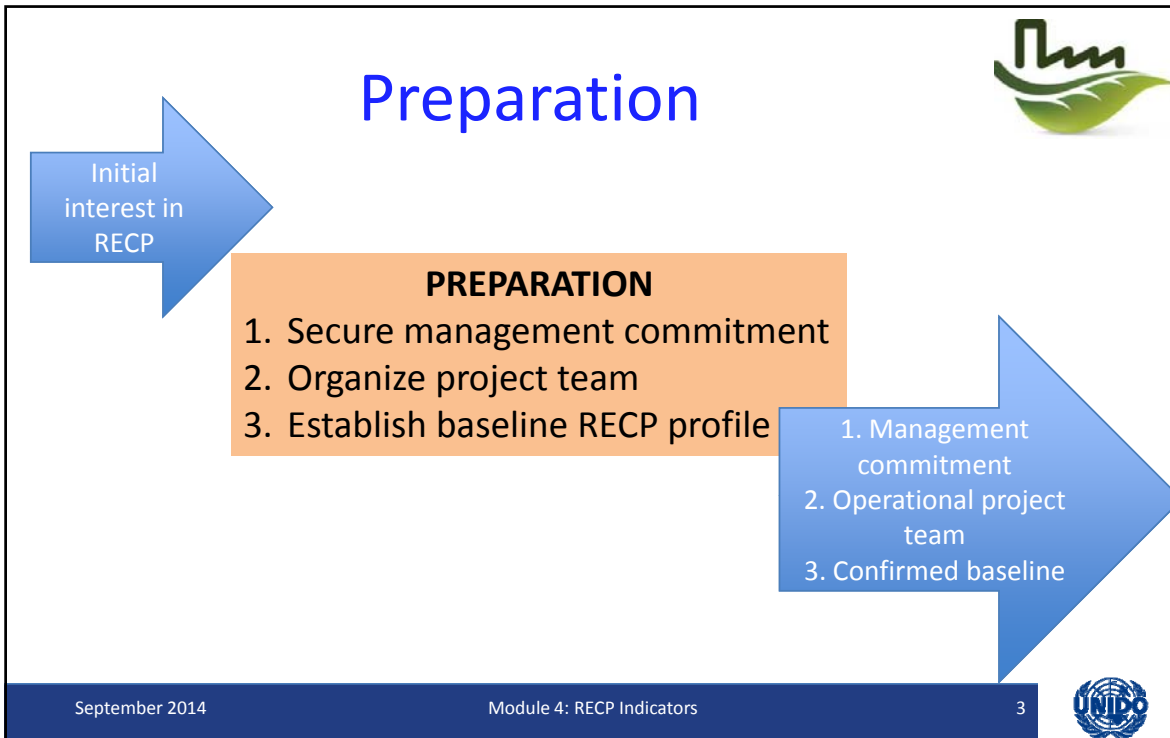


Module 4 RECP Indicators



September 2014 Module 4: RECP Indicators 2





Managing Performance

RECP is aimed at turning resource efficiency and pollution intensity into performance areas for management and staff, yet these new performance areas can only be managed when relevant indicators are monitored routinely.

September 2014 Module 4: RECP Indicators 4

Why Use Indicators?

Monitoring & measuring performance help enterprises to:

- Track environmental performance
- Reduce costs
- Set and achieve targets
- Promote learning
- Improve and optimize operations
- Involve staff
- Access new markets
- Improve decision making
- Communicate results
- Implement EMS

September 2014 Module 4: RECP Indicators 5

Indicator System

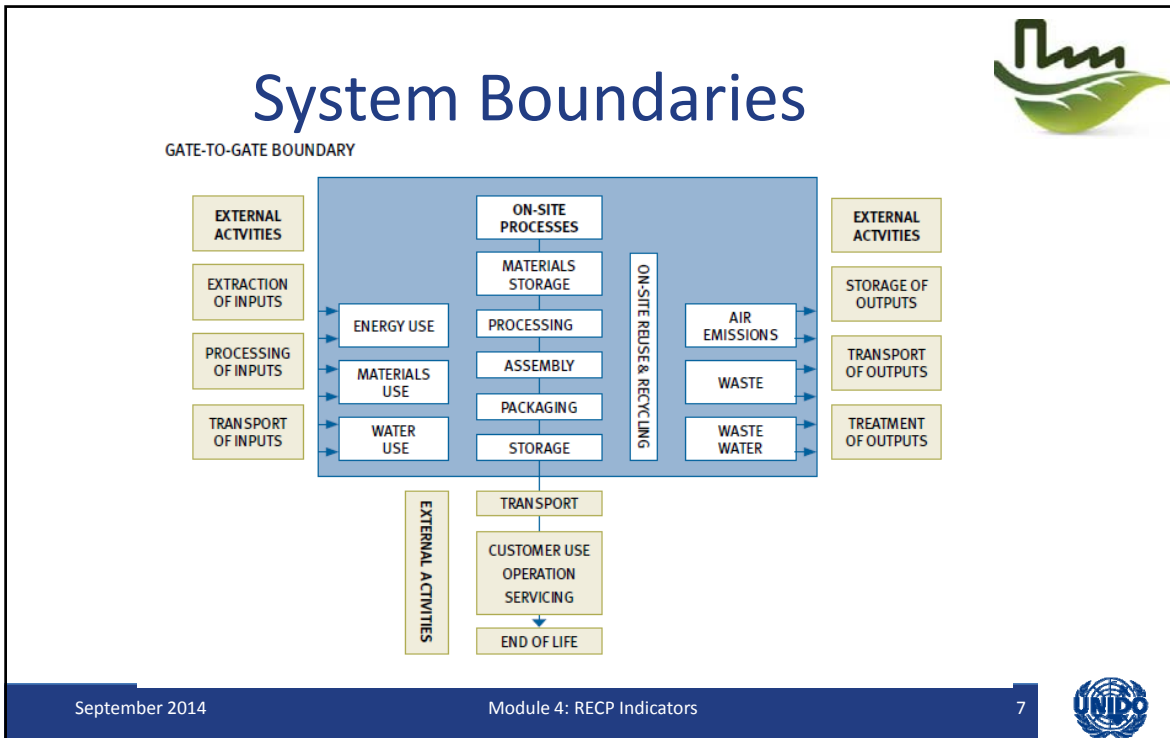
1. DEFINE
Identify the right performance measures

2. PREPARE
Establish the most suitable performance management framework

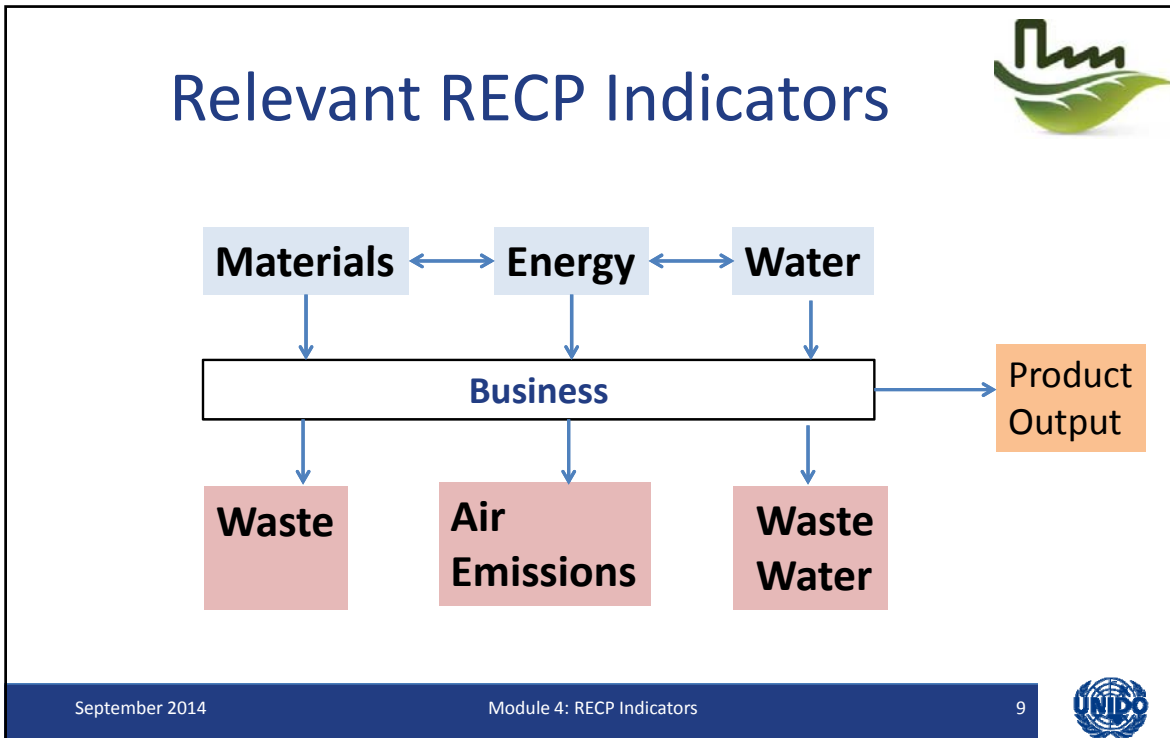
3. EMBED
Make performance measurement part of business activities

4. SHOW
Communicate company performance measures

September 2014 Module 4: RECP Indicators 6



- ## Indicator Types
- **Absolute indicators**
 - Measure basic data in a given time frame, typically one year:
 - » KI of water used annually
 - » Tons of waste shipped annually
 - » Annual production
 - **Relative indicators**
 - Ratios of absolute indicators:
 - **Productivity ratios**: amount of product output per unit of resource consumption, **to increase over time**
 - **Intensity ratios**: amount of pollution generated per unit of production, **to decrease over time**
- September 2014 Module 4: RECP Indicators 8



Good Monitoring Practices

Setting boundaries:

- Gate-to-gate boundary
- Same boundaries must be used for all successive measurements
- Boundaries can be extended but then baseline must be adjusted

Establishing a baseline:

- 1st time application of indicator set
- Can be done retrospectively
- Optimally 1 year
- Can be re-established

Information sources:

- Metering, calculations, estimations
- Invoices, associations, suppliers
- Ensure comparability e.g. same conversion factors, methods
- Be aware of accuracy

Creating guidelines:

- Accountability
- Purpose
- Common understanding
- Approved methods
- Learning
- Auditable

September 2014 Module 4: RECP Indicators 10 UNIDO



RECP Profile



Set of six RECP indicators developed that is generally applicable for tracking enterprise level resource efficiency and pollution intensity over time in particular in small and medium enterprises.





Productive output per unit of material consumption
e.g in ton product /ton material



Materials indicators	Reference indicator	Conversion
<ul style="list-style-type: none"> Total materials use, in t/yr Materials productivity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	1 ton = 1,000 kg 1 kton = 1 million kg
Total materials use should include Materials purchased from external suppliers, materials from internal sources (extraction, harvesting), including: <ul style="list-style-type: none"> Raw materials Associated process materials (materials that are needed for production but are not part of the final product, e.g., lubricants for machinery) Semi-manufactured goods or parts that are part of the final product Materials for packaging purposes 		Getting data <ul style="list-style-type: none"> Invoices from suppliers Weighbridge data Incoming goods records Receipts/bills Inventory




Productive output per unit of energy consumption

e.g in ton product /MWhr

Energy indicators	Reference indicator	Conversion		
<ul style="list-style-type: none"> Total energy use, in MJ/yr or kWh/yr Energy productivity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	1 kWh	=	3.6 MJ
		1 MJ	=	0.278 kWh
Total energy use should include		Getting data		
<ul style="list-style-type: none"> Power generated on site (natural gas, fuel oil, coal, biofuels, waste, refined fuels, solar power, and power from wind turbines and small hydro units, etc.) District heating/cooling Imported electricity Imported steam 		<ul style="list-style-type: none"> Invoices from suppliers Receipts/bills Inventory 		






Enterprise Level Indicators for Resource Productivity and Pollution Intensity

September 2014

Module 4: RECP Indicators


13

Productive output per unit of water consumption

e.g in ton product /GJ

Water indicators	Reference indicator	Conversion		
<ul style="list-style-type: none"> Total water use, in kl/yr or m³/yr Water productivity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	1 kl	=	1 m ³
		1 kl	=	1,000 l
Total water use should cover water sourced from		Getting data		
<ul style="list-style-type: none"> Municipal water supplies or other utilities Surface water (wetlands, rivers, lakes, oceans) Groundwater (including water from your own or external wells) Rainwater harvested and used Waste water from other organizations 		<ul style="list-style-type: none"> Invoices from suppliers Receipts/bills Measurements Meters Calculations Estimates 		




Enterprise Level Indicators for Resource Productivity and Pollution Intensity

September 2014

Module 4: RECP Indicators

14





Waste generation per unit of productive output

e.g t waste/ton product



Waste indicators	Reference indicator	Conversion
<ul style="list-style-type: none"> Total waste, in t/yr Waste intensity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	1 ton = 1,000 kg 1 kton = 1 million kg
Total waste should include		Getting data
<ul style="list-style-type: none"> Waste sent to landfill Waste incinerated Hazardous waste Municipal waste Garden waste Waste sent to recycling outside your site 		<ul style="list-style-type: none"> Invoices/bills from disposal utilities or companies Recordings of weighbridges (at factory or landfill) Calculations Estimates



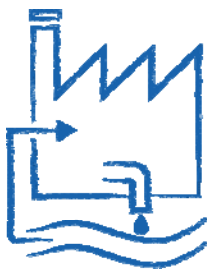

Air emissions per unit of productive output

e.g t CO2/ton product



Air-emission indicators	Reference indicator	Conversion (approx. values) CO2 emissions, in grams per kWh
<ul style="list-style-type: none"> Greenhouse gas emissions, in tons or CO2 eq./yr Carbon intensity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	Natural gas = 200 Fuel oil: light = 260 Fuel oil: heavy = 280
Air emissions should include emissions from		Getting data
<ul style="list-style-type: none"> Generation of electricity, heat, steam, including imported energy Combustion processes Physical or chemical processing Venting Fugitive emissions 		Mainly from calculations, with data derived from: <ul style="list-style-type: none"> Invoices from suppliers Receipts/bills Measurements Calculations Estimates/standardized emission factors for common processes Lists of conversion factors Lists of carbon content





Effluent generation per unit of productive output


e.g kl/ton product

Waste-water indicators	Reference indicator	Conversion	
<ul style="list-style-type: none"> Total waste water, in kl/yr or m³/yr Waste-water intensity 	Product output, in units/yr, tons/yr, kl/yr or USD/yr	1 kl	= 1 m ³
		1 kl	= 1,000 l
Waste water should include		Getting data	
<ul style="list-style-type: none"> Waste water that leaves the company boundaries by pipes, tanks or other forms of removal Water from processes, sanitary uses, cleaning Unplanned discharges, providing that the volume can be measured/estimated Water seepage into groundwater 		<ul style="list-style-type: none"> Invoices from waste-water authority of effluent-treatment plant Receipts/bills Measurements Water-balance calculations Estimates based on emission factors and industry benchmarks 	



Enterprise Level Indicators for Resource Productivity and Pollution Intensity
© 2014 UNIDO

September 2014
Module 4: RECP Indicators
17




RECP Indicator Calculation Tool

- Excel-based
- Includes detailed instructions
- Work sheets for 3 successive measurements (can be extended)
- Worksheets for target-setting
- Basic GHG calculator
- GHG conversion factors
- Can be further developed/adapted

Change units

Insert baseline data

Insert follow up measurements


→

Table with absolute indicators


Table with relative indicators



RECP profile

Reductions or increases in absolute terms

September 2014
Module 4: RECP Indicators
18


Example Indicator Tool





Before After
The installation of the hood has led to the avoidance of the emission of gases with high lead concentration.

Table 1: Results at a glance

Absolute Indicator	Change (%)	Relative Indicator	Change (%)
Resource Use		Resource Productivity	
Energy Use	-16	Energy Productivity	46
Materials Use	20	Materials Productivity	2
Water Use	0	Water Productivity	23
Pollution generated		Pollution Intensity	
Air Emissions (global warming, CO2 eq.)	-16	Carbon Intensity	-31
Waste Water	0	Waste water Intensity	0
Waste	-4	Waste Intensity	-22
Production output	23		

September 2014
Module 4: RECP Indicators
19


Monitoring RECP Progress/1



- Improvements of RECP profile
 - Enterprise level
 - Compare baseline with annually updated impact profiles

Metalexacto RECP Profile

RESOURCE PRODUCTIVITY (change in %)


Follow up

Indicator	Change (%)
Energy Productivity	46
Materials Productivity	2
Water Productivity	23

POLLUTION INTENSITY (change in %)

Follow up

Indicator	Change (%)
Carbon Intensity	-31
Waste water Intensity	0
Waste Intensity	-22

September 2014
Module 4: RECP Indicators
20


Monitoring RECP Progress/2



- Cumulative benefits
 - Absolute benefits gained from all options
 - Total investment
 - Total annual savings
 - Total resource savings
 - Energy, water, materials
 - Total environmental benefit
 - Waste, effluents and emissions

Table 2: Options Implemented

Principal Options Implemented	Economic		Benefits	
	Investment [USD]	Cost Saving [USD/yr]	Resource Use Reductions in energy use, water use and/or materials use (per annum)	Pollution generated Reductions in waste water, air emissions and/or waste generation (per annum)
Change of refractory bricks from 31% to 50% aluminum oxide (Al ₂ O ₃) and installation of a hood on the furnace	2,470	16,986 (lead sold) 450 (fuel)	Additional recovery of 34.7 tons of lead.	19% less lead in the slag, decreased quantity of waste.
Change of burner and optimization of residual fuel and diesel, and improved mixing of fuel in the refining process.	965	1,215	Decrease of residual oil use by 2.66%.	Reduced air emissions by almost 240 tons CO ₂ eq.
Warming of the fuel by taking advantage of the residual heat of the oven.	280	184	Decrease of electricity use by 5,760 MJ.	



Reporting & Disclosure

Having established a routine to monitor basic RECP indicators, company may consider monitoring additional (environmental and resource productivity) indicators for either internal and/or external use.



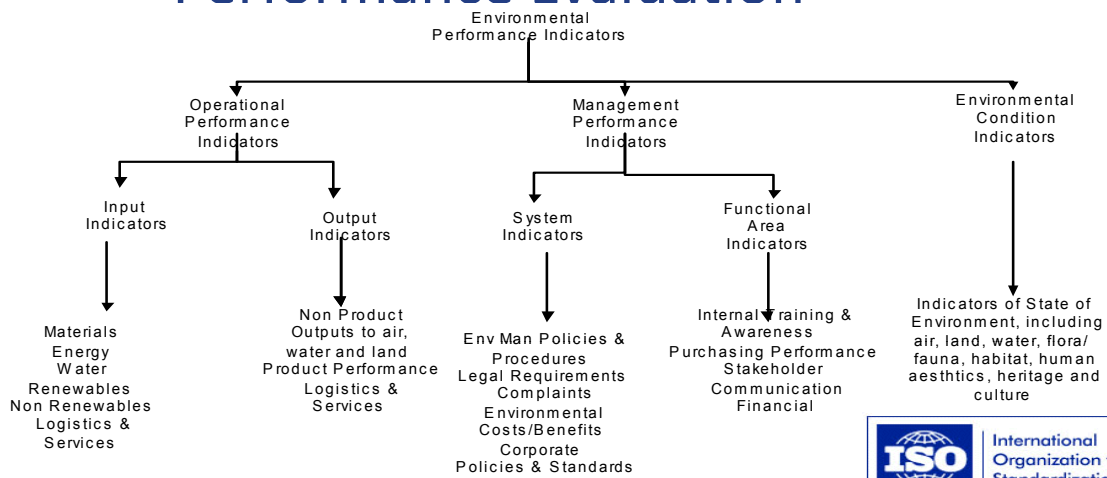
ISO 14031: Environmental Performance Evaluation




Category	Subcategories
<p>Operational Performance Indicators</p> <p>➤ Provide information about the environmental performance of an organisation's performance</p>	<ul style="list-style-type: none"> ○ Inputs of materials, energy and services ○ Supply of inputs ○ Design, installation, operation and maintenance of physical facilities and equipment ○ Outputs of products, services, wastes and emissions ○ Delivery of outputs
<p>Management Performance Indicators</p> <p>➤ Provide information about the management efforts to influence an organisation's environmental performance</p>	<ul style="list-style-type: none"> ○ Implementation of policies and programmes ○ Conformance ○ Financial performance ○ Community relations
<p>Environmental Condition Indicators:</p> <p>➤ Specific expression that provides information about the local, regional, national or global condition of the environment</p>	



ISO 14031: Environmental Performance Evaluation





Monitoring AND Reporting?



- Yes
 - Performance evaluation is not an end in itself
 - Sustainability performance evaluation is about process of interaction with stakeholders
 - Companies have bias to concealing potentially embarrassing information
 - Performance measurement often driven by external reporting commitments

- No
 - Performance evaluation should be driven by internal decision making requirements
 - Legitimate reasons not to disclose
 - Reporting not sufficiently flexible for ongoing engagement with stakeholders



September 2014
Module 4: RECP Indicators
25


Why Report?









Achieve internal and external competitive advantage through sustainability reporting.

Ready-to-Report: introducing sustainability reporting for SMEs, GRI, Amsterdam, 2014




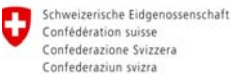

September 2014
Module 4: RECP Indicators
26







- 34 Environmental Indicators, by aspects:
 - Materials (2)
 - Energy (5)
 - Water (3)
 - Biodiversity (4)
 - Emissions (7)
 - Effluents and Waste (5)
 - Products and Services (2)
 - Compliance (1)
 - Transport (1)
 - Overall (1)
 - Supplier Environmental Assessment (2)
 - Environmental Grievance Mechanism (1)

September 2014 Module 4: RECP Indicators 27 

Module 4
RECP Indicators

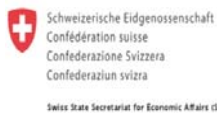






September 2014 Module 4: RECP Indicators 28 

Thank You



www.unido.org/cp
www.recpnet.org



September 2014

Module 4: RECP Indicators

29

