

Prepared by:



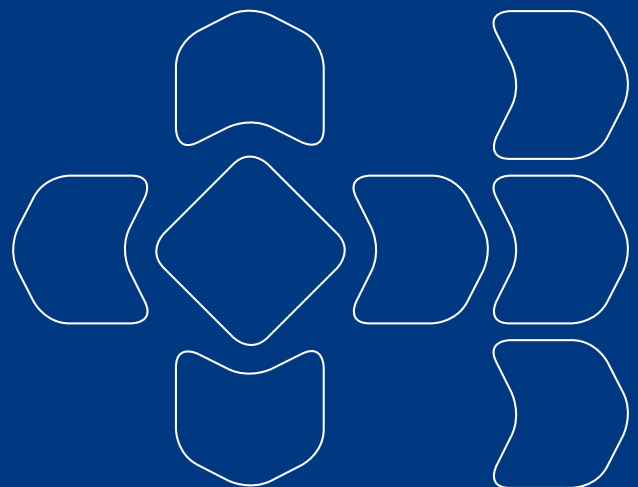
In collaboration with:



University of Applied Sciences Northwestern Switzerland
School of Life Sciences

A detailed, high-contrast black and white photograph of industrial machinery, showing several large metal gears and bearings in motion, creating a sense of mechanical complexity and precision.

Cleaner Production Excellence Model





Environmental Excellence

Doing Good, Doing Great

EFQM is very pleased that *sba* in collaboration with FHNW & RSS and with the financial support of the Swiss State Secretariat for Economic Affairs (SECO) has created 'The Cleaner Production Excellence Model'. This will be of great value to many organisations in the Mediterranean region, in Europe and beyond. It will help them to 'do good' and to 'do great' at the same time.

Environmental Excellence is about contributing some good to the world. The planet earth's capacity to support human activity has its limits. This has been debated for many years and is now accepted by many experts and many people. By continuously improving their environmental performance, companies across the world offer one answer among others to this challenge. By helping organisations to continuously chart their progress in terms of environmental performance, 'The Cleaner Production Excellence Model' will become a stepping stone for organisations' contribution to a better world.

At the same time environmental Excellence is also about 'doing great' for the companies that embark on such a journey.

There is no doubt that by optimization the use of natural resources and by reducing wastes, companies and organisations will identify new ways to make savings. However, this is only one part of the benefits.

More and more consumer preferences integrate environmental issues. As a consequence companies integrate this dimension as a core requirement of their customers which needs to be fulfilled.

This is true for business to consumers companies but this is also deployed along many supply chains across the world. By clearly demonstrating that they are making progress against a framework for environmental Excellence, companies and organisations will be able to satisfy their customers and develop trust relationships with them.

Consumers are also employees. Organisations that take their responsibilities to society seriously have demonstrated, time after time, that this is a motivating factor for their employees. Moreover, this is a unique opportunity to offer some employees the chance to demonstrate their leadership skills by engaging with the local communities on their important issues. Environmental Excellence can act as a springboard for talent to reveal itself within organisations.

Last, but not least, society gives to organisations that excel in environmental performance a license to operate. They also provide them with their future workforce, innovative ideas through interactions and many valuable resources to perform their mission and progress.

In conclusion, EFQM supports the 'Cleaner Production Excellence Model' and commits to willingly disseminating it across its membership and beyond.

Chris Lebeer
Chief Executive Officer



EFQM, a not-for-profit membership foundation, is the primary source for organizations in Europe looking to excel in their market and in their business. EFQM is the house of the EFQM excellence model, which served as a basis for the Cleaner production Excellence Mode.



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1. What is Cleaner Production

According to the UNEP (United Nations Environment Programme):

'Cleaner Production (CP) is the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase overall efficiency, and reduce risks to humans and the environment. Cleaner Production can be applied to the processes used in any industry, to products themselves and to various services provided in society.'

For production processes, Cleaner Production results from one or a combination of conserving raw materials, water and energy; eliminating toxic and dangerous raw materials; and reducing the quantity and toxicity of all emissions and wastes at source during the production process.

For products, Cleaner Production aims to reduce the environmental, health and safety impacts of products over their entire life cycles, from raw materials extraction, through manufacturing and use, to the 'ultimate' disposal of the product.

For services, Cleaner Production implies incorporating environmental concerns into designing and delivering services.'

Hence, CP is a mentality, a philosophy which pursues 'prevention' rather than 'remediation' in order to achieve sustainable growth.

CP is a 'win-win' strategy. It protects the environment, the consumer and the worker while improving industrial efficiency, profitability, and competitiveness. It therefore embraces economic and social considerations, in addition to the environmental dimension.

CP is a comprehensive approach that encompasses what some countries/institutions call eco-efficiency, waste minimisation, pollution prevention or green productivity. It should not be considered as a legal or scientific definition to be subjected to theoretical disputes.

CP principles

- Good housekeeping
- Segregation
- Input material or process/production change
- Process control and improved process conditions
- On-site recycling or recovery
- Production of useful by-products
- Product modification



2. The need for CP and the Model

As a result of the non-sustainable exploitation of natural resources, the entire world is currently facing considerable environmental problems such as global warming and ozone layer depletion, among others. For years, industries have been seeking solutions to reduce their impact to the environment. In most cases, they have focused on 'remediation' that is, on repairing the pollution already generated. That, of course, requires enormous amounts of money, and environment is seen, in many cases, as a synonym for 'cost' damaging competitiveness.

By adopting CP, environment management is not a 'cost' anymore but a source of efficiency and productivity, a source of economic savings, which automatically reduces risks to humans and the environment.

The CP Excellence Model can assist not only in the adoption of CP but in a systematic implementation of a comprehensive CP system. Specifically, it can be used by organisations as:

- A framework for implementing CP systematically and effectively, and/or
- A tool for the assessment of the current CP strategy

The CP Excellence Model has been inspired from the EFQM Model, a non-prescriptive framework for business excellence. The EFQM Model is the most widely used organisational framework in Europe and the basis for the majority of national and regional Excellence Awards.

The CP Excellence Model is applicable to all kind of manufacturing organisations regardless of industrial sector (food, beverage, chemical, textile, metal, etc.) or size (large, medium, small). It has been designed as part of a CP Project financed by the Swiss State Secretariat for Economic Affairs (seco) and implemented by SBA, the University of Applied Sciences North-western Switzerland (FHNW) and the Environmental Research Centre of the Jordanian Royal Scientific Society (RSS).



3. Fundamental Concepts of the CP Excellence Model

The CP Excellence Model is built upon a set of “beliefs” which have been called Fundamental Concepts. While impacting among each other, Fundamental Concepts are linked directly or indirectly with the Model Criteria. These Fundamental Concepts are explained as follows.

Leadership and Management Commitment

Leadership and Management Commitment are crucial for the establishment of a comprehensive CP System. Excellent organisation’s senior leaders are committed to set and communicate clear and consistent strategies, which involve the participation of all organisational levels. By doing so, they inspire the employees and all stakeholders providing an ideal structure for the implementation of any strategy. The development, implementation and improvement of policies and strategies reflect or prove management commitment.

Employee’s Motivation

Achieving outstanding performances should also be the responsibility of employees throughout the organisation. In order to get such “commitment” from them, high levels of motivation are required. Companies could increase their employees’ motivation by a continuous training, by increasing their technical capacities thus making them feel as key contributors to the fulfilment of global objectives and targets.

Pollution Prevention

Pollution Prevention involves practices that reduce or eliminate the creation of pollutants at “source” through increased efficiency in the use of raw materials, energy, water, or other resources. Indeed, it includes any practice, such as product or process modifications, input substitutions and good housekeeping, that reduces the amount of any hazardous pollutant entering any waste stream (including fugitive emissions) prior to recycling, treatment or disposal. The application of such concept, which should be an integrated part of product and process development, reduces hazard impacts to human health and the environment.

Recycling, Reusing and Recuperation

When pollution or wastes cannot be prevented (reducing or replacing), they should be considered as potential resources, which may be transformed into useful products or by-products by Recycling, Reusing and/or Recuperation.

Energy Efficiency

It means using energy more efficiently without affecting production levels and quality. Additional benefits could also be obtained as pollutant emissions reduction, production levels increase and materials consumption reduction. It follows the same “prevention” philosophy by focusing on the consumption and losses of energy in processes.

Economic Sustainability

Economic issues are among the 3 components of Sustainable Development. Companies can survive or achieve reasonable competitiveness if they get economic sustainability. By applying Cleaner Production principles (prevention pollution, energy efficiency, recycling, reusing and recuperation), inputs and outputs costs are reduced thus economic benefits arise. Another important characteristic of Cleaner Production is that payback periods, generally, are short.

Social Responsibility

An integrated approach to CP creates new capital and employment and improves human health and quality of life. That is why the social aspect, being a component of Sustainable Development, is an integrated part or a consequence of implementing Cleaner Production.

Continuous Improvement

Cleaner Production options should be implemented continuously to achieve high quality standards and thus reach Excellence. Continuous improvement means to capture and share knowledge in order to maximise learning across and within the organisation, and to look beyond today’s capabilities. Excellent organisations continuously learn, both from their own activities and performances and from that of others (benchmarking). Excellence challenges the status quo by creating improvement opportunities.

Fundamental Concepts

- Leadership and Management Commitment
- Employee’s motivation
- Pollution Prevention
- Recycling, Reusing and Recuperation
- Energy efficiency
- Economic sustainability
- Social responsibility
- Continuous improvement



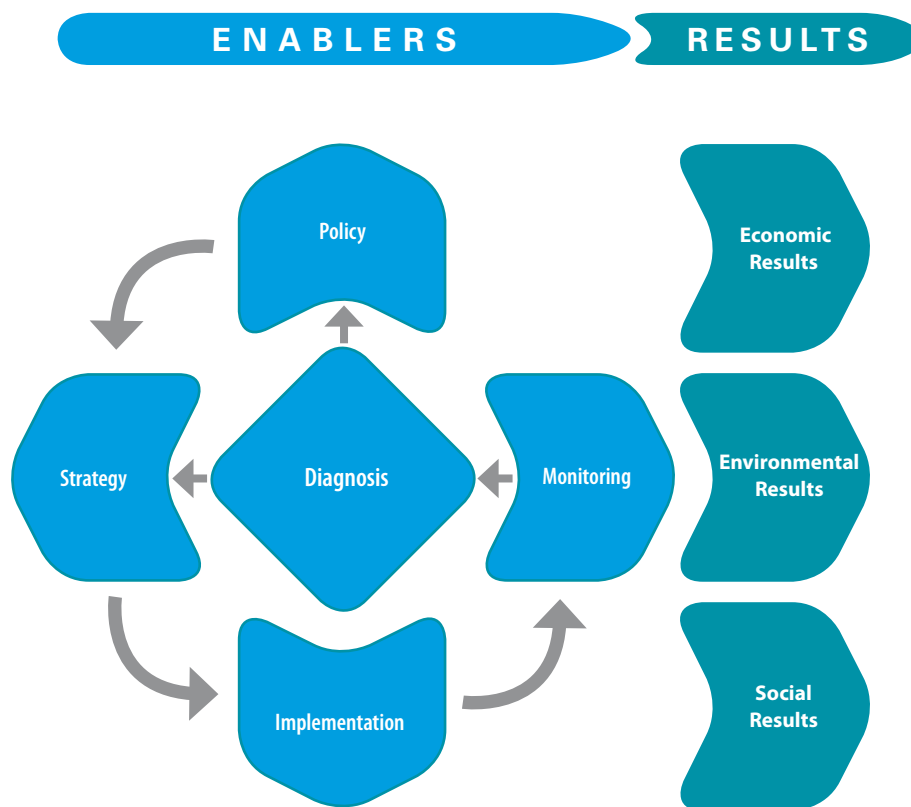
4. The CP Excellence Model

The CP Excellence Model is a framework based on eight criteria. Five of these are 'Enablers', which cover what an organisation does, and the other three are 'Results', which cover what an organisation achieves. Enablers cause Results and are improved using feedback from Results.

The Model is based on the premise that: 'excellent and sustainable environmental, economic and social results are achieved by applying CP in a systematically mode

which implies the development and establishment of a diagnosis, a policy and a strategy, the implementation of CP options and the monitoring of results'.

Since the model represents a sound management system approach, all Criteria are directly or indirectly linked (dynamic model) and are interdependent. The Figure below presents the Model in diagrammatic form, showing also the interrelationships among Enablers and Results.

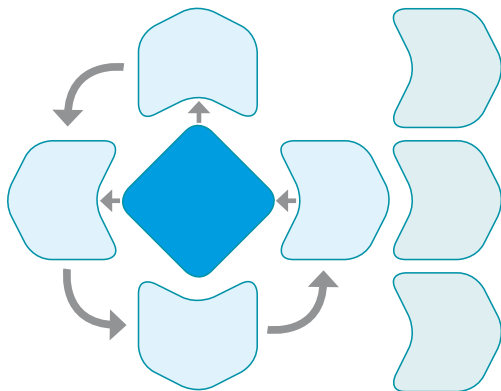


The Cleaner Production Excellence Model

The Model's 8 boxes represent the Criteria that have to be met in order to implement the CP system and progress towards Sustainable Development. Each Criterion is sup-

ported by certain number of Sub-criteria that should be considered in the course of implementations, to meet the respective Criterion.

4.1 CP DIAGNOSIS



An excellent CP System's performance requires the systematic execution of an in-depth examination or diagnosis of the company's activities aspects influencing environmental, economic and social issues. Indeed, the CP Diagnosis is crucial for the implementation and improvement of the CP System. It provides the picture of the "environmental-economic-social footprint" of the organisation, which constitutes the basis for the development, implementation and continuous improvement of a sound Cleaner Production Policy and Strategy with clear objectives and targets. Sub-criteria or elements to think about while developing a CP Diagnosis are described here below.

4.1.1 How Processes are analysed

This may include:

- Describing the processes involved including all unit operations and their objectives.
 - Describing operation variables (temperature, pressure, pH, etc.) and carrying out material balances.
 - Describing quality and production control systems.
 - Doing an equipment inventory, specifying their roles in processes and noting relevant information as production capacity, efficiency, motors power, work pressures, etc.
 - Description of all internal and external ancillary services used in the company (steam generation, air, energy supply – electricity, fuel, etc. – water services, waste collection services, wastewater treatment services, etc.), as well as of all equipments involved (boilers, air compressors, refrigeration equipment, water treatment, etc.).
 - Verifying procedures instruction specification or documentation in all processes.
- Specifying quantities and costs of products and materials consumed during at least the last 48 months.
 - Doing a study of water consumption, for example, by specifying water sources, quantities consumed during the same period of products analysis, processes in which water is used (water diagram) and costs related to water handling (supply, pump's energy consumption, chemicals used for treatment, etc.).
 - Doing a study of electrical energy consumption, for example, by specifying electricity sources, quantities consumed during the same period of products analysis, power received or generated, processes in which electrical energy is used (electrical energy diagram) and costs related to its consumption.
 - Doing a study of thermal energy consumption, for example, by specifying sources, fuel quantities consumed during the same period of products analysis, efficiency of thermal energy production, processes in which thermal energy is used (i.e. steam diagram) and costs related to its consumption.
 - Justifying all variations and trends observed in the data analysed.
 - Carrying out a materials (energy, water, raw materials, products, sub-products, etc.) mass balance (partial and global materials mass balance).

4.1.2 How Products and Materials Consumption are analysed

This may include:

- Doing inventories of products and materials including relevant information (e.g. suppliers).

4.1.3 How Emissions are analysed

This may include:

- Doing a study of wastewater emissions, for example, by specifying sources of generation, quantities generated, costs related to their handling, pollutant charge contents (BOD, COD, grease & oil, heavy metals, phosphorus, etc.).
- Doing a study of air emissions, for example, by specifying sources of generation, quantities generated, costs related to their handling, pollutant charge contents (CO₂, CO, NO_x, SO_x, particles, PM10, dust, etc.).
- Doing a study of solid waste emissions, for example, by specifying sources of generation, quantities generated, costs related to their handling, waste type, soil infiltrations, etc.
- Doing a study of noise, for example, by specifying sources of generation and noise levels.

4.1.4 How Occupational Health and Industrial Safety are analysed

This may include:

- Gathering information about workplace injuries/accidents including an analysis of causes.
- Analysing potential health hazards of the worksite.
- Describing existing safety means for eliminating, preventing or controlling hazards (safety rules as personal protective equipment).
- Analysing employees and neighbourhood satisfaction and complaints.

4.1.5 How the CP Diagnosis is systematically and continuously executed

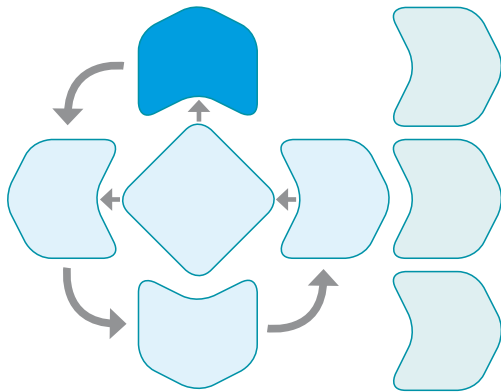
This may include:

- Executing the CP Diagnosis before the CP System implementation
- Executing, revising and updating continuously the CP Diagnosis once the CP System is already operating
- Planning the CP Diagnosis and informing all the plant about the execution of the CP Diagnosis
- Forming a CP team for the execution of the CP Diagnosis and all activities related to the CP system
- Recording all CP Diagnosis in a report



¹ From a strict definition point of view, Cleaner Production does not include Occupational Health and Industrial Safety, which are related to the Social Responsibility concept. However, the application of Cleaner Production automatically results in the improvement of the workplace environment, health and safety. That is why such a social issues are part of the CP Excellence Model.

4.2 CP POLICY



CP Policy should reveal not only the commitment of management to the CP System implementation, but also the commitment of the organisation to apply the CP Philosophy, to comply with legal requirements and to involve all stakeholders (employees, suppliers, clients, etc.) in the CP System. Furthermore, the CP Policy, which has to be documented, implemented, maintained, improved and communicated, provides the framework for the establishment of objectives. Sub-criteria related to this Criterion are described here below.

4.2.1 How CP Policy is developed, established, reviewed and updated

This may include:

- Top Management assuming the commitment to implement the CP System by developing, establishing, reviewing and updating the CP Policy.
- Developing a CP Policy consistent with the Fundamental Concepts.
- Understanding and assimilating all aspects influencing environmental, economic and social issues identified in the CP Diagnosis in order to distinguish all relevant elements that must be included or maintained in the CP Policy.
- Establishing a CP Policy accordingly to the characteristics and size of the organisation as well as with all impacts caused from its activities.
- Developing a clear and goal oriented CP Policy that is understandable, credible and meaningful to everyone.
- Reviewing and updating as required such CP Policy.
- Involving concerned departments' employees in the development, establishment, review and updating of the CP Policy.

4.2.2 How we ensure CP Policy is comprehensive

This may include:

- CP Policy expressing the organisation commitment to

the implementation of the CP Philosophy as strategy for achieving Sustainable Development.

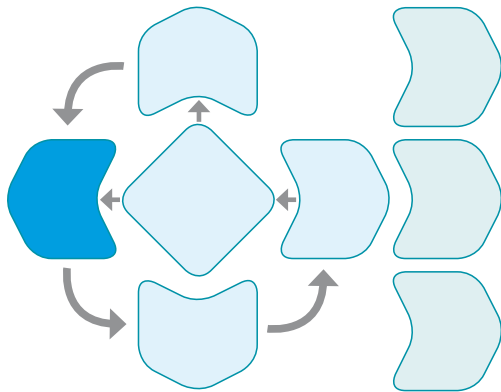
- CP Policy stating the compliance with environmental and health & safety legal requirements.
- CP Policy declaring the commitment to prevent and reduce the environmental impacts identified in the CP Diagnosis (raw materials consumption, emissions to air, water and soil, etc.).
- CP Policy affirming the commitment to improve health & safety issues in the plant.
- CP Policy expressing the organisation commitment to increase productiveness and efficiency in all aspects.

4.2.3 How CP Policy is communicated

This may include:

- Communicating the CP Philosophy at every organisational level of the company.
- Writing or documenting the CP Policy.
- Displaying visibly the CP Policy in all areas of the organisation.
- Assuring that all employees know the CP Policy contents and every change made.
- Communicating the CP Policy to all stakeholders and to the public.

4.3 CP STRATEGY



An Excellent CP System requires the development and deployment of a sound strategy, which involves: the establishment of clear objectives and targets based on the CP Policy, the CP Diagnosis and a systematic revision of legal requirements; the identification of suitable CP Options aimed at the fulfilment of such objectives; and the planning of such CP Options implementation (action plan) and monitoring. Sub-criteria guiding the establishment of this Criterion are described here below.

4.3.1 How Legal Requirements are systematically reviewed

This may include:

- Identifying and updating systematically all legal requirements concerning the CP System (environmental, occupational health, safety, etc.).
- Keeping a documented record of all legal requirements.
- Reviewing systematically the compliance or non-compliance of all legal requirements.

4.3.2 How Objectives are developed, established and reviewed

This may include:

- Taking the CP Policy into account as framework for the development and updating of objectives, which in other words, are the environmental, social and economic 'Results' expected (environmental, social and economic aspects constitute the crucial elements or components of Sustainable Development).

- Taking the CP Diagnosis findings and legal requirements into account as basis for the formulation and updating of objectives and targets.
- Formulating, establishing and updating, as required, measurable, consistent and real environmental objectives.
- Formulating, establishing and updating, as required, measurable, consistent and real objectives related to health & safety.
- Formulating, establishing and updating, as required, measurable, consistent and real objectives related to productiveness and efficiency increase.
- Identifying relevant performance indicators to measure objectives and targets achievement (measurability).

4.3.3 How CP Options are systematically identified and assessed

This may include:

- Involving the team that made the CP Diagnosis in the CP Options identification.
- Assuring that such team is well trained on CP Options identification and has updated knowledge on CP practices and technologies.
- Identifying, developing and raising options based on the CP Philosophy (prevention and reduction) aiming at achieving objectives, therefore at solving all problems identified in the CP Diagnosis.
- Assessing the technical, economic, legal, organisational and financial feasibility of the identified CP options – preliminary experimental tests to practically determine the CP Options' feasibility might be needed.
- Specifying all technical details related to the CP Option and to its implementation (i.e. changes to be performed, equipment needed, procedures, etc.).
- Identifying possible obstacles to the implementation of the CP Options and finding their respective solutions.
- Calculating all benefits expected by the implementation of each CP Option and describing to what extent the option contribute to the set objectives.
- Recording all these points in a technical report – data to be included should be clearly described, discussed and presented.

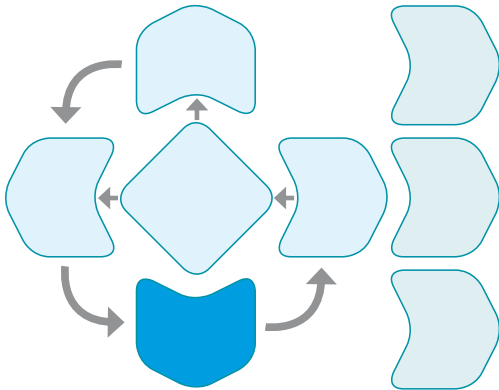
4.3.4 How CP Options Implementation is systematically planned

This may include:

- Developing and establishing a written schedule (to be included in the technical report) for each CP Option to be implemented containing, for example, the following information:
 - CP Option
 - objective(s) to be fulfilled with such an option
 - benefits expected (degree of objectives fulfilment)
 - deadline for finishing the implementation
 - deadline for achieving results
 - investment budget needed and approved
 - responsible for the implementation, employees concerned and training necessities
- Planning the Monitoring.



4.4 CP IMPLEMENTATION



CP Implementation is the materialisation of CP Strategy and refers to all activities related to the application of CP Options in order to fulfil established objectives. It should follow the instructions included in the “technical report” and the written schedule. Excellent companies manage implementation systematically and effectively. Sub-criteria related to this Criterion are suggested here below.

4.4.1 How CP Options are effectively executed

This may include:

- Implementing all CP Options stated in the technical report, following all the indications specified in it and in the written schedule.
- Assuring all technical, financial and human resources for the implementation.
- Continuously reviewing the implementation process.
- Being prepared for any eventuality that may change the course of implementations.

4.4.2 How Implementation Responsibilities are clearly defined

This may include:

- Assuring that all people assigned for the implementation (in the written schedule) are well informed, prepared and with enough time to face their responsibilities.
- Assuring the adequate training for all personnel involved in CP Implementation.

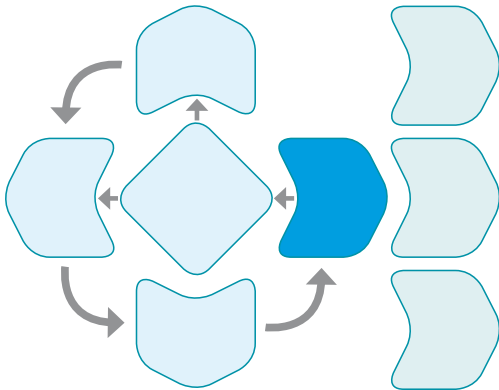
4.4.3 How CP Implementation is communicated

This may include:

- Assuring that all personnel know about the CP System implementation.
- Organising staff meetings.



4.5 MONITORING



What is not monitored cannot be managed. Results measuring allow controlling the objectives fulfilment, the implementation effectiveness and the environmental, economic and social company's performance follow-up. Furthermore, Monitoring results permits the updating of CP Diagnosis, CP Policy, CP Strategy and CP Implementation, i.e. the updating of the entire CP System. Excellent organisations' continuous improvement depends on a systematic Monitoring. Sub-criteria related to this Criterion are described here below.

4.5.1 How Monitoring is systematically and adequately applied

This may include:

- Monitoring methodically and periodically all CP Options implementation results – measurement frequency should be carefully and adequately determined.
- Using monitoring procedures and methodologies (continuously updated, reviewed and documented) adequate to what is being measured.
- Using suitable monitoring equipment well and methodically calibrated.
- Documenting and reporting all monitoring results as well as all problems faced during the implementation process.

4.5.2 How Monitoring Results are adequately assessed

This may include:

- Calculating variations in materials consumptions, emissions, processes efficiencies, production, health and safety issues, etc., caused by each CP Option.
- Calculating the respective savings that each CP Option might have produced.

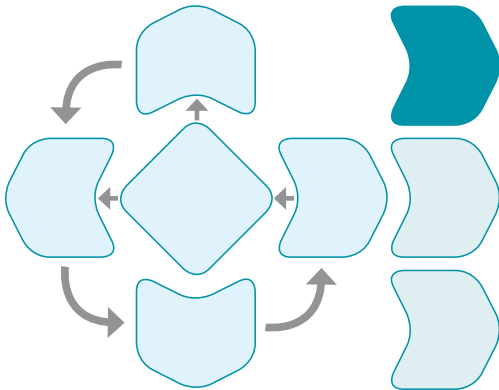
- Calculating relevant performance indicators (i.e. those identified for measuring the objectives' compliance) to assess the implementations effectiveness.
- Quantifying the degree or level of objectives achievement.
- When relevant, selecting adequate benchmarks for comparing the company's performance and, if applicable or necessary, re-determining new objectives.
- Documenting and reporting all findings and analysis.

4.5.3 How a Monitoring Report is used for continuous improvement

This may include:

- Assuring that Monitoring results are used for avoiding any deviation from objectives and in the regular updating of both the approach and the deployment of the CP System (continuous improvement).
- Assuring that Monitoring results are used in the following CP Diagnosis.

4.6 ECONOMIC RESULTS



Implementation of CP Options involves economic profits since processes are optimised, efficiency and productivity are increased and pollution is prevented or reduced. Excellent organisations achieve outstanding Economic Results which enhances their competitiveness. Economic Results expected should be defined by the organisation and agreed in its CP Policy and Strategy. Key Economic Performance Indicators as well as Key Production Performance Indicators could be used for expressing and assessing Economic Results linked to the CP Model Enablers Criteria.

4.6.1 Key Economic Performance Indicators

Depending on the objectives of the organisation, some of the following Key Economic Performance Indicators could be used to assess economic revenues:

- Return on investments made in CP.
- Payback period of such investments.
- Production costs.
- Maintenance costs.

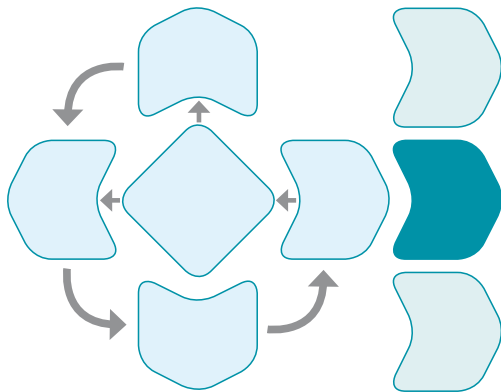
4.6.2 Key Production Performance Indicators

Key Production Performance Indicators that may be used are:

- Production quantities.
- Efficiency.
- Productivity.



4.7 ENVIRONMENTAL RESULTS



Excellent organisations achieve outstanding results with respect to the environment as pollution discharges are reduced. This enhances competitiveness, productivity and image, among others. Environmental Results are related to resources consumption and the consequent emissions. Thus, Key Consumption Performance Indicators and Key Emission Performance Indicators could be used to express and assess Environmental Results linked to the CP Model Enablers Criteria.

4.7.1 Key Consumption Performance Indicators

Depending on the organisation's processes and materials used, the following Key Performance Indicators related to consumption may be used:

- Water specific consumption ($\text{m}^3/\text{production unit}$).
- Electricity specific consumption ($\text{kWh}/\text{production unit}$).
- Thermal energy specific consumption ($\text{kJ}/\text{production unit}$).
- Chemicals specific consumption ($\text{kg}/\text{production unit}$).
- Fuel specific consumption ($\text{kg}/\text{production unit}$).
- As well, absolute consumptions could also be reported (m^3 of water/month or year, kWh/month or year, kg of material/month or year, kg of fuel/month or year).

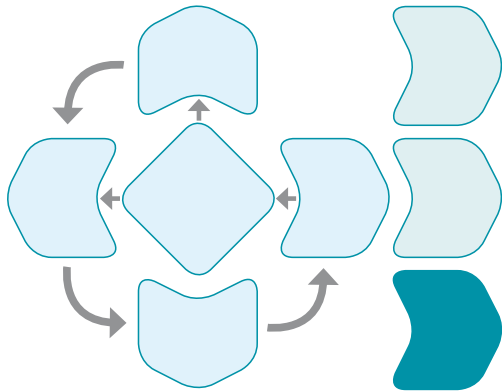
4.7.2 Key Emission Performance Indicators

Depending on the organisation's processes, materials used and emissions characteristics, the following Key Performance Indicators related to emissions (to air, water and soil) could be used:

- Wastewater: BOD charge, COD charge, greases & oils, phosphorus, heavy metals, etc., in terms of specific quantities ($\text{kg}/\text{production unit}$) and/or absolute units (kg/month or year).

- Solid waste: organic waste, paper, glass, hazardous waste, etc., in terms of specific quantities ($\text{kg}/\text{production unit}$) and/or absolute quantities (kg/month or year).
- Air emissions: CO_2 , SO_x , NO_x , particles, dust, etc., in terms of specific quantities ($\text{kg}/\text{production unit}$) and/or absolute quantities (kg/month or year).
- Soil emissions: lixiviates (kg/kg of solid waste) or surface of soil polluted (m^2/year).
- Noise: levels of noise (decibels).

4.8 SOCIAL RESULTS



Excellent organisations also achieve outstanding results with respect to employees and the surrounding society welfare (health and quality of life). Social Results expected should be defined by the organisation and agreed in its CP Policy and Strategy. In order to assess these results, linked to the implementation of Enablers Criteria, Key Social Indicators could be used.

4.8.1 Key Social Performance Indicators

These “indicators” refer to people and worker’s perception of the organisation which could be measured through surveys, focus groups, interviews, etc. As well, these indicators provide information on the progress of the organisation in controlling Health and Safety.

Key Social Performance Indicators that could be used are:

- Worker’s motivation with CP.
- Worker’s satisfaction (with work environment conditions for example).
- Complaints from the neighbourhood or others.
- Occupational injury statistics (for example: slips, trips and falls).
- Work-related illnesses.
- Injury and illness rates.
- Incidents, including those with the potential to cause injury, illness or death.
- Number of major accidents (for example: spillage of a toxic or flammable material).





5. The CP Assessment Methodology

In order to understand where an organisation is in relation to CP, some form of assessment has to be undertaken. To achieve this, the CP Assessment Methodology (CPAM) that is described and detailed in this section has been developed.

CPAM is based on RADAR, the approach to assessment developed for use with the EFQM Excellence Model. It is used by organisations across Europe and as the basis for the European Quality Award. RADAR, for reasons shown below, stands for Results, Approach, Deployment, Assessment and Review.

Companies may use CPAM for their self-assessment, and the CP Recognition Scheme Assessors for the assessment of applications to the CP Recognition Scheme.

Using CPAM for their self-assessment, companies are able to produce a comprehensive set of strengths and opportunities to improve on their journey to Sustainable Development, and use these as a basis for further improvement. In addition, the methodology provides a scoring profile across the eight criteria, which can be used for benchmarking purposes.

For the CP Recognition Scheme, CPAM gives Assessors the tools to perform a structured, transparent and fair evaluation of all applications.

The Methodology assumes that an organisation:

- Determines the CP Results it is aiming for as part of its policy and strategy making process. These results cover the performance of the organisation, in terms of economic, environmental and social responsibility performance.
- Plans and develops an integrated set of sound Approaches to deliver the required results both now and in the future.
- Deploys the approaches in a systematic way to ensure full implementation.
- Assesses and Reviews the approaches used based on monitoring and analysis of the results achieved and ongoing learning activities. Finally, identify, prioritise, plan and implement improvements where needed.

Approach, Deployment, Assessment and Review apply to Enablers (CP Diagnosis, CP Policy, CP Strategy, CP Implementation and Monitoring), whilst Results applies to Results (Economic, Environmental and Social Results).

5.1 The Elements and Attributes of CPAM

Results, Approach, Deployment, Assessment and Review are the elements of CPAM and each element contains a number of attributes. The following describes the specific elements of CPAM that should be addressed using the attributes that can be seen in bold.

Results

This covers what an organisation is achieving through its CP system. In an excellent organisation the results show positive trends and/or sustained good performance. Targets will be set, at an appropriate level and met or exceeded. Performance will be compared externally and will compare well with others, particularly against best in sector and/or best in class. The cause and effect link between approaches adopted and results achieved will be clear. Additionally, the scope of the results will address the relevant areas and where appropriate results will be segmented for example by customer or department.

Approach

This covers what an organisation does and the reasons for it. Excellent organisations will have sound approaches to CP. Having a sound approach means having a clear rationale that focuses on the organisation's present and future needs; ensuring processes are defined and developed in order to support and deliver the approaches. In addition, the approaches will be integrated meaning that they have a clear basis in policy and strategy and are linked to other approaches where appropriate.

Deployment

This covers what an organisation does to implement the approach and the extent to which the approach is present in the appropriate parts of the organisation. In an excellent organisation the approach will be implemented in relevant areas in a systematic way. This means the deployment will be well planned and introduced in a manner suitable for the approach and the organisation.

Assessment & Review

This covers what an organisation does to review and improve both the approach and the deployment of the approach. In an excellent organisation the approach, and deployment of it, will be subject to regular measurement, learning activities will be undertaken, and the output from both will be used to identify, prioritise, plan and implement improvement.

5.2 Guidelines for the Assessment and Scoring

The tables below help the assessment of Enablers and Results respectively. They reflect the relevant attributes for each element and each attribute needs to be assessed separately. When assessing Criteria, each attribute

(e.g. Sound, Integrated etc.) should be scored from 0% to 100% and averaged to create an initial view of the score for the element. The scores for the elements are then averaged to create an initial score for the Enabler or Result.

CPAM SCORING MATRIX – ENABLERS

(Applies to CP Diagnosis, CP Policy, CP Strategy, CP Implementation and Monitoring)

ELEMENTS	ATTRIBUTES	0%					25%					50%					75%					100%				
Approach	Sound - the reasons for choosing the approach are clear - there are well defined processes to support the approach	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
	Integrated - approach supports policy and strategy - approach is linked to other approaches as appropriate	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
Deployment	Implemented - approach is implemented across appropriate parts of the organisation	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
	Systematic - approach is deployed in a structured way with the method used for deployment being planned and executed soundly	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
Assessment & Review	Sound - regular measurement of how well the approach is carried out - measurement of the effectiveness of deployment is carried out - measures selected are appropriate	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
	Sound - the reasons for choosing the approach are clear - there are well defined processes to support the approach	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
	Integrated - approach supports policy and strategy - approach is linked to other approaches as appropriate	No evidence or anecdotal					Some evidence					Evidence					Clear evidence					Comprehensive evidence				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100					
OVERALL SCORE		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				

adapted from RADAR scoring ©2003 EFQM

CPAM SCORING MATRIX – RESULTS

(Applies to Economic Results, Environmental Results and Social Results)

ELEMENTS	ATTRIBUTES	0%					25%					50%					75%					100%				
Results	Trends - trends are positive AND/OR - there is sustained good performance	No trends or anecdotal information					Positive trends and/or satisfactory performance for about ¼ of results					Positive trends and/or sustained good performance for about ½ of results over at least 2 years					Positive trends and/or sustained good performance for about ¾ of results over at least 2 years					Strongly positive trends and/or sustained excellent performance for all results over at least 3 years				
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
	Targets - targets are achieved - targets are appropriate	No targets or anecdotal information					Targets achieved and appropriate for about ¼ of results					Targets achieved and appropriate for about ½ of results					Targets achieved and appropriate for about ¾ of results					Targets achieved and appropriate for all results				
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
	Comparisons - results compare well with others	No comparisons or anecdotal information					Comparisons for about ¼ results					Favourable comparisons for about ½ results					Favourable comparisons for about ¾ results					Favourable comparisons for about all results				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
Results	Causes - results are caused by approaches in Enablers	No visible cause and effect or anecdotal information					Cause and effect visible for about ¼ results					Cause and effect visible for about ½ results					Cause and effect visible for about ¾ results					Cause and effect visible for all results				
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
	Scope - results address relevant areas - results are appropriately segmented e.g. by product group, by process	No Results or anecdotal information					Results address ¼ of relevant areas and segments					Results address ½ of relevant areas and segments					Results address ¾ relevant areas and segments					Results address all relevant areas and segments				
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
OVERALL SCORE		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				

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Prior to scoring, all strengths, opportunities to improve and points to be examined or confirmed on site must be fully recorded. The strengths and opportunities to improve provide the basic evidence on which the initial

criteria score is based. Following the site visit these strengths and opportunities to improve are refined in the light of what has been learned and the score adjusted accordingly.

Finally, the global score can be calculated, multiplying each percentage by the “weight” assigned to each criterion (see Table below). These weights were established on the basis of the Cleaner Production Philosophy and other Award schemes, as well as field experience and experts’ opinion on the matter combined with targeted interviews performed in Jordan. As it can be observed, the weight assigned to the Enabler Criteria is greater than

that assigned to Results (60% vs. 40%). This is to reflect the view that, in the early days of implementing a Cleaner Production system, it will take some time for improved results to appear. After all, Enablers must be implemented before they can drive the improved results. However, later on, the weights will be reviewed and will probably reflect the 50% vs. 50% exhibited between the Enabler and Results criteria of the more mature global models.

GLOBAL SCORE CALCULATION

CRITERIA	SCORE [%]	WEIGHT	WEIGHTED SCORE
CP Diagnosis		100	
CP Policy		50	
CP Strategy		150	
CP Implementation		150	
Monitoring & Measuring		150	
Economic results		150	
Environmental results		150	
Social Responsibility results		100	
		TOTAL	



Glossary

Action Plan	Specific actions set to achieve certain objectives in which resource commitments time horizons for accomplishment of these actions are detailed.
Approach	The methods, procedures or processes used by an organisation to achieve its objectives.
Benchmarking	A technique that involves comparing the organisation's results against best practices, performance of similar activities or historical performance of competitors and business leaders, with the objective of achieving improvement.
Employee Satisfaction	The degree to which an employee's expectations are fulfilled or exceeded by the organisation.
Environment	It is the natural surrounding of the enterprise, including air, water, soil, natural resources, flora, fauna, human beings, and their interactions.
Environmental Impact	Any modification of the environment whether negative or positive, total or partial, resulting from the activities, products or services of an enterprise.
Excellence	Outstanding practice in managing the organisation and achieving best results based on a set of Fundamental Concepts which include: sustainable development, leadership & management commitment, employees' motivation, pollution prevention, recycling reusing and recuperation, energy efficiency, economic sustainability, social responsibility and continuous improvement.
Key Performance Indicator	A specific expression, quantitative or qualitative, which provides information on the performance of a company.

Leadership	The art of influencing people while operating to meet organisational requirements and improving the organisation.
Philosophy	It is set of ideas or concepts that someone has about how to deal with a particular situation.
Productivity	Productivity refers to measures of the efficiency of resources use. It is calculated as the ratio of outputs to inputs.
Production Process	The group of related unit operations, means and activities, which transform inputs (raw materials and resources) into outputs (intermediate products, sub-products, final products).
Risk	The probability of an undesirable occurrence associated with the activities of an industrial site taking place during the application of a production process, storage, use and/or transport of inputs and outputs.
Stakeholders	An individual or a group concerned with or affected by the performance of a company (employees, governmental authorities, ONG's, clients, neighbours, research centres, chambers of industry, suppliers, etc.).
Supplier	The provider of a product or service to the organisation.
Sustainable Development	It is a concept that means adopting strategies, such as Cleaner Production (CP), and activities that meet the present needs of the enterprise and all of its stakeholders while protecting, sustaining and enhancing the human natural resources that will be needed in the future. Sustainable Development is a journey, not a destination.

For further information, please contact:

Sustainable Business Associates (sba)

Karim Zein
Tel +41 21 648 48 84
Fax +41 21 648 48 85
E-mail sba@sba-int.ch
Web Site www.sba-int.ch

School of Life Sciences

Institute for Ecopreneurship
University of Applied Sciences
Northwestern Switzerland (FHNW)
Prof. Dieter Mutz
Tel +41 61 467 45 68
Fax +41 61 467 42 90
E-mail dieter.mutz@fhnw.ch
Web Site www.fhnw.ch

Environmental Research Center (ERC)

Royal Scientific Society (RSS)
Dr. Bassam Hayek
Tel +962 6 534 47 01 ext 2475
Fax +962 6 534 03 73
E-mail erc@rss.gov.jo
Web Site www.cp.org.jo

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Editor

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Authors

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