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The Triple Bottom Line Approach — Environmental Domain

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TBL Approach

- **Productivity** – organization and visual management of the workplace
- **Environment** - more rational use of resources and reduction of waste and emissions at the source
- Social domain – enhancement of labor standards, working conditions, health and safety, freedom of association, employees' involvement in decision-making



Croatian Cleaner Production Centre

- Officially established as a non governmental organisation on February 15, 2000
- Within the framework of the UNIDO project “*Capacity building in CP in Croatia*” (1997-2000)



International declaration on Cleaner Production

- signed in December 2001



National Environmental Award in 2004



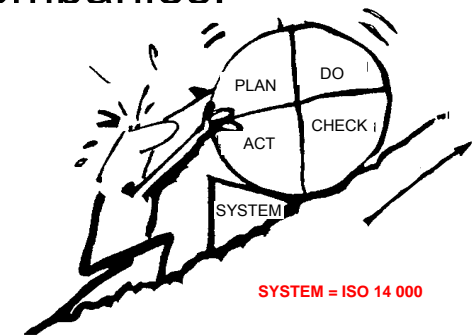
Activities

- ★ Awareness raising and dissemination of information on CP concept and CP methodology
- ★ Education, advisory and consultation activities in the field of CP and EMS in industrial companies, services, municipalities



- ★ Training in CP/EMS in industrial companies, services, municipalities
- ★ Policy advising

- ★ Co-operation with NGOs, educational, expert and governmental institutions in the multidisciplinary projects (cleaner production, environmental management systems, sustainable development)





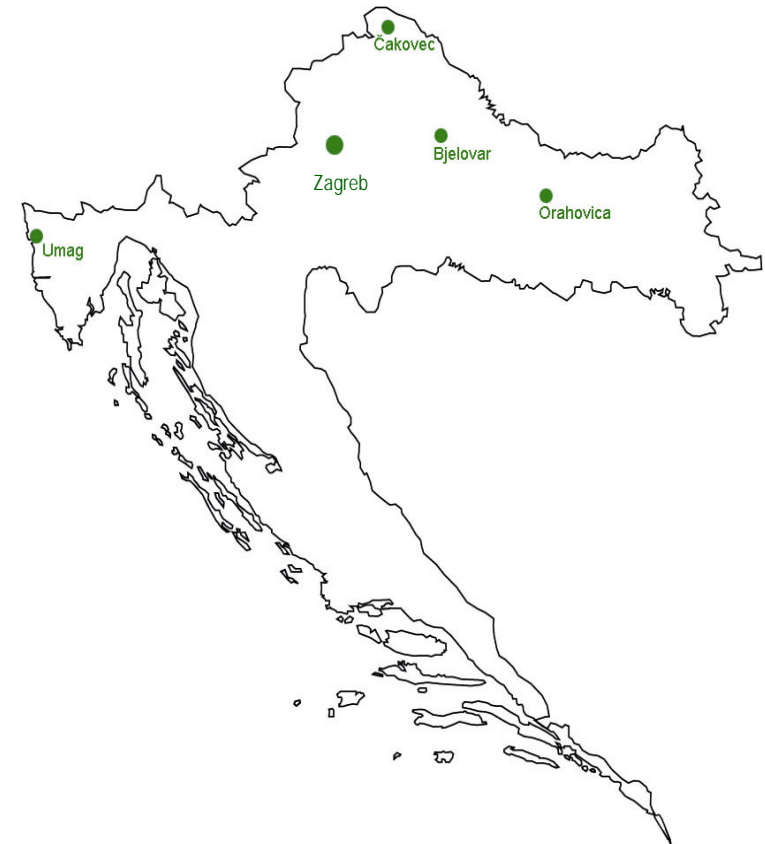
Role in the UNIDO CSR Project

- **Nacional partner – Implementing Agency**
- **Member of the UNIDO CPC Network**
- **Experience in introducing CP and EMS in companies**



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- **Demonstration examples in selected pilot companies**
- **4 selected companies:**
 1. KIO KERAMIKA – ceramic tiles producer
 2. LURA d.d., Tvornica Sirela – diary
 3. PPM d.o.o., Čakovec – metal industry
 4. SIPRO d.d., Umag – chemical industry





Environmental domain

Aim:

To introduce cleaner and more rational use of resources and to train companies on methods to reduce waste and emissions at the source.

LEADING QUESTIONS:

- How can my company improve its production process to reduce waste and harmful emissions?
- How can my company reduce the consumption of fresh water and reduce the discharge of waste water?
- How can my company raise the awareness of its employees on environmental responsibility?



Cleaner Production

Cleaner production 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.

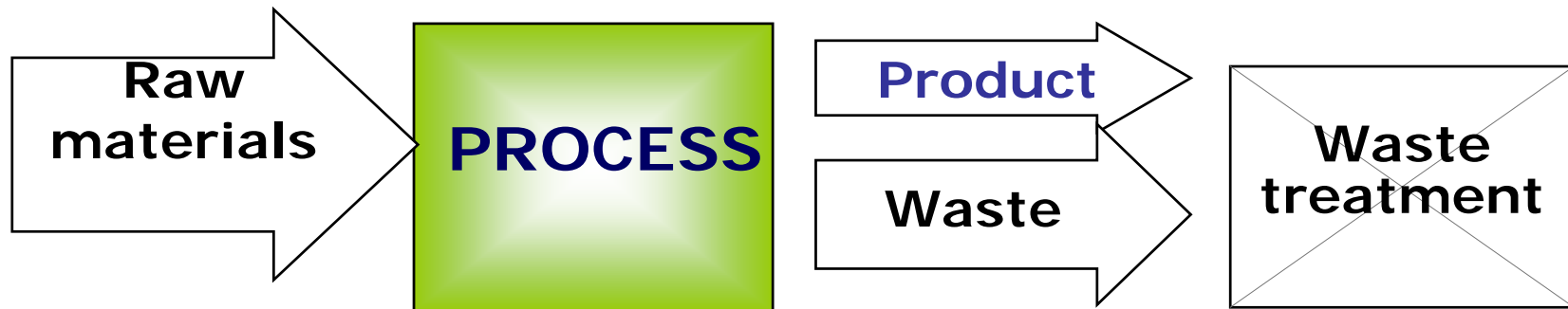
For production processes, cleaner production includes more efficient exploitation of raw materials and energy, elimination of toxic and dangerous materials and prevention of generation of waste and emissions at source.

For products and services, cleaner production aims to reduce the environmental impacts of products and services over their entire life cycles, from their development through manufacturing and use.

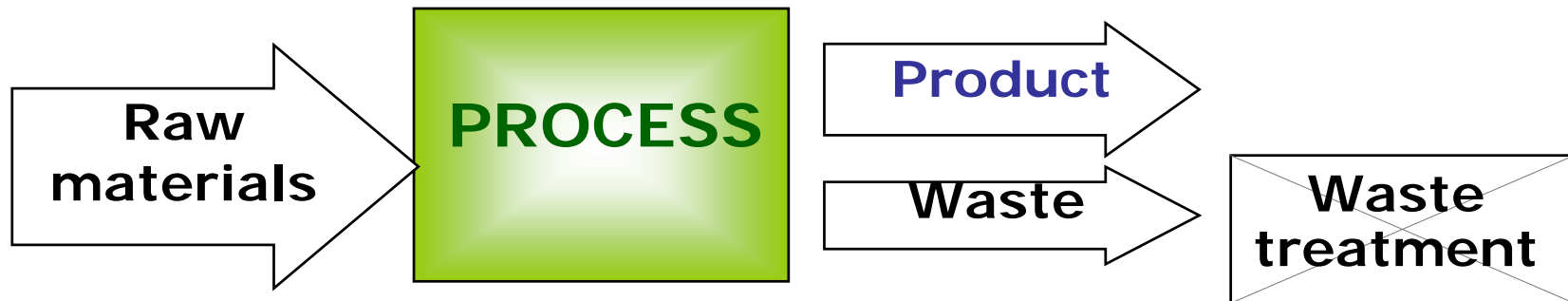
(UNEP Definition of cleaner production)



Cleaner Production



ORIGINAL PROCESS



AFTER CP ASSESSMENT



Benefits from CP

- **Reduced costs for raw materials**
- **Reduced costs for waste handling and disposal**
- **Reduced environmental fees**
- **Reduced energy costs**
- **Improved product quality**
- **More efficient production**
- **Improved public image**



CP measures

- **Good housekeeping or good manufacture practices**
- **Technological changes**
- **Product modification**
- **Replacing toxic or non-renewable materials**
- **On-site recycling**

CP measures are more efficient, the closer their implementation is to the source of pollution.



CP Assessment - steps

Preparation of the project

- Obtaining commitment of company/organisation management
- Declaration of the environmental policy

Pre-assessment

- Input and output analysis, priorities

Project planning and organisation

- work team, objectives, time schedule

Analysis phase

- material and energy balance, cause of waste generation, environmental indicators

Option generation

- proposing and selection of solutions

Feasibility studies

- technical, environmental, economic

Implementation phase implementation of measures

Evaluation of the results



CONTINUATION OF CP





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- **Project input**
 - Seminar, coaching, materials
- **Situation assessment**
 - Shop floor visits
- **Identification of potential areas of intervention**
 - CP Assessment
 - Implementation of concrete measures
 - Definition of performance indicators
- **Impact review**
 - Documentation of performance indicators - REAP software



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Environmental performance indicators

3 Environmental performance indicators												
Indicator	Calculation	Data 01/2004- 12/2004	Data 01/2005- 04/2005	Initial data (05 2005)			Control data (11 2005)					
				Company level	Dept/ prod. line 1	Dept/ prod. line 2	Dept/ prod. line 3	Company level	Dept/ prod. line 1	Dept/ prod. line 2	Dept/ prod. line 3	

- **Energy use** (electrical efficiency)
- **Water use** (fresh water, re-use)
- **Waste water** (BOD, COD, TSS)
- **Solid waste** (total, hazardous)
- **Air quality** (VOC, odour)



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Results

Some of the measures implemented:

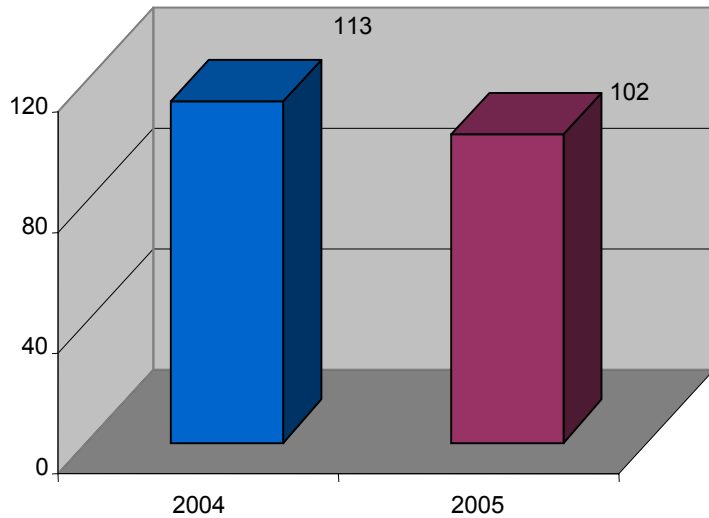
- **Goodhousekeeping measures** (working porcedures, water and energy savings)
- **Separate waste collection**
- **Internal reusing**
- **Solvent recuperation** – emmission reduction
- **Water consumption reduction**
- **Waste reduction**



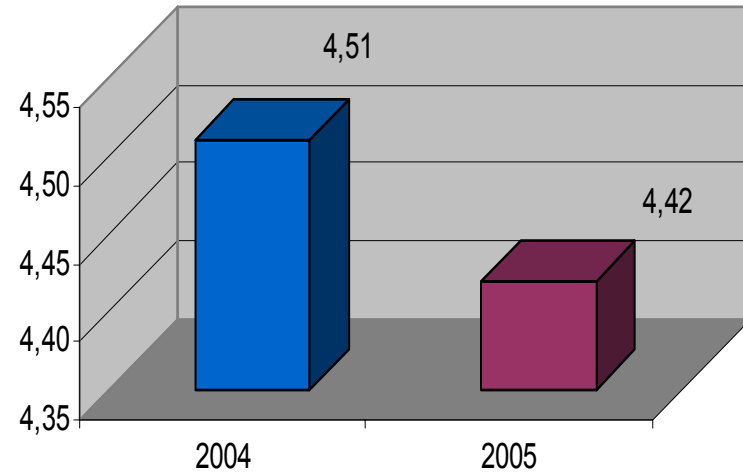
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Results Company A

Energy consumption kWh/t milk



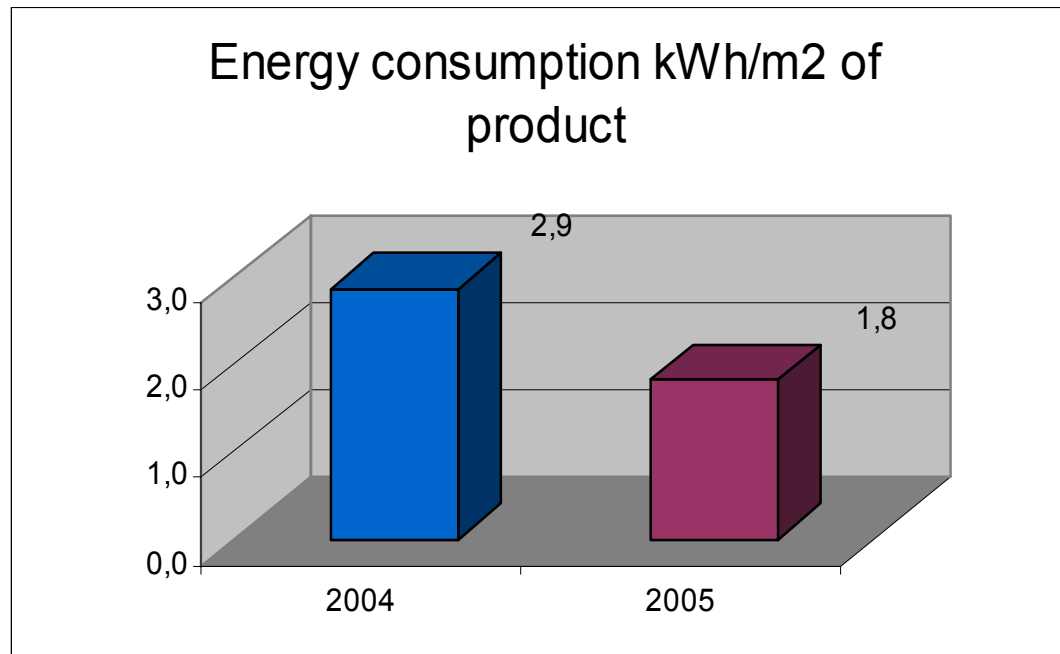
Water consumption
m³/t milk





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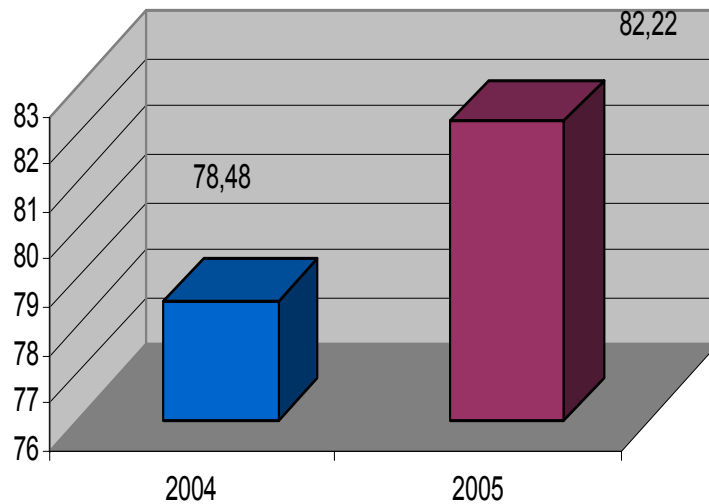
Results Company B





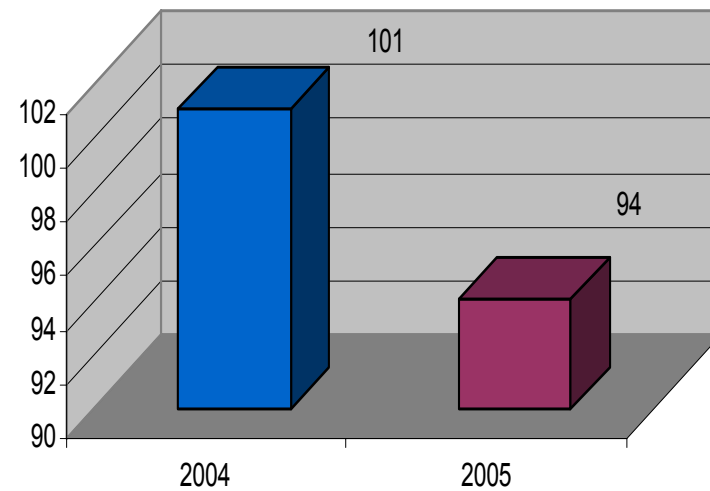
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Toluen recuperation



Results Company C

Waste kg/t product





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THANK YOU FOR YOUR ATTENTION!

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