

## RECP Experiences at INCALSA

Resource Efficient and Cleaner Production (RECP) implementation at INCALSA led to annual savings of USD 9,917, an investment of USD 41,057, and improved product quality. While the initial intent of the company was to address the problem of Chemical Management, the RECP programme enabled the company to also improve their Energy Efficiency and reduce the quantity of GHG emissions generated per unit of production.

INCALSA has demonstrated that taking care of materials, energy, water, waste and emissions, the enterprises may increase the competitiveness and make good business sense. RECP covers the application of preventive management strategies, which increase the productive use of natural resources, minimize generation of residues, waste and emissions, and foster safe and responsible production. Benefits are eminent in many enterprises, regardless of sector, location or size.

### Achievements at a Glance

In a simple glance is possible to see the improvements obtained in INCALSA on energy efficiency with the implementation of a Dyeing Jet System, because there not visual evidence of steam, water and pigments loses. Also the management of chemical products has improved as seen in the photographs.



Old Dyeing Machines



Dyeing process improved: Dyeing jet



Old chemical products placement



New chemical products placement

### Overview

INCALSA S.A. de C.V. is a textile company in El Salvador that produces fabric, dyed fabric and finished garments for women, men and children for the local market and for exporting. The company is located in Santa Ana, in the west of the country, and has 75 workers.

The main target of the RECP programme implemented at INCALSA was the management of its chemical substances and wastes. Although the company increased its production by more than 10%, energy productivity increased by 30%. The Jet System implemented allowed the company significantly to increase its production capacity. Moreover, the implementation of RECP options generated savings of around USD 9,917, with an investment of USD 41,057.

The company implemented a condensate return system to raise the temperature of the water used in the boiler, as well as insulating and repairing leaking pipes in order to make the process more efficient and save energy.

The company also replaced two dyeing machines by a Dyeing Jet with a capacity of 250 kg of fabric. This jet has a consumption of 6.5 kg of steam per kg of dyed fabric which makes the process more efficient because every dyeing machines had a consumption of 8.02 kg of steam per kg of dyed fabric.

## Benefits

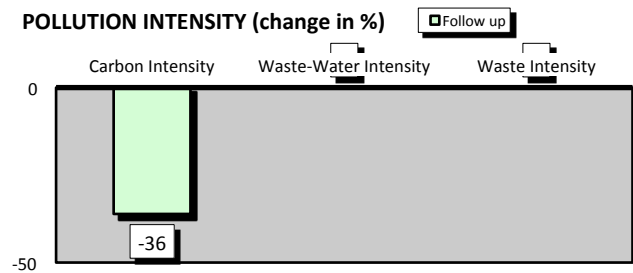
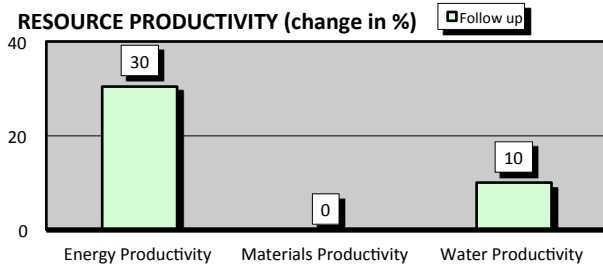
The measures of the steam system had a total investment of US\$ 6,057 with saving of US\$ 2,817. These have the environmental benefits of 1,055 gallons of fuel per year (46,720 kWh/year), which represents a reduction in emissions of 12 ton CO<sub>2</sub> per year.

The implementation of the dyeing Jet has as benefits, the increase of production up to 45% full load and reduction of 21% of dyeing time. It also has a reduction of fuel consumption of 2,489 gallons per year 110 MWh/year equivalent to 30 ton of CO<sub>2</sub>; and 170 kg of chemicals (Dispercol SNL, Secuestrante FA, Lubritex, Caustic Soda, Surfactol CC). This measure had an investment of US\$ 35,000 with annual savings of US\$ 7,100.

Absolute Indicator	Change (%) Year 1	Relative Indicator	Change (%) Year 1
<b>Resource Use</b>		<b>Resource Productivity</b>	
Energy Use	-15.70	Energy Productivity	30
Materials Use	N/A	Materials Productivity	N/A
Water Use	N/A	Water Productivity	10
<b>Pollution Generated</b>		<b>Pollution Intensity</b>	
Air emissions (global warming, CO <sub>2</sub> equivalent)	-29.72	Carbon Intensity	-36.11
Waste-water	N/A	Waste-water Intensity	N/A
Waste	N/A	Waste Intensity	N/A
<b>Production Output</b>	10		

**Note:** The absolute indicators provide a measurement of how much resource use/pollution output has changed in absolute terms e.g. units of energy used or tons of waste generated. A negative percentage indicates a decrease and a positive percentage indicates an increase. The relative indicators provide a measurement of changes in resource use/pollution in relation to production output. Resource productivity provides a measurement of how much product output can be produced per unit of resource use, from a sustainability perspective, productivity should increase. Pollution intensity provides a measurement of how much pollution is generated per unit of production output, from a sustainability perspective, intensity should decrease.

## RECP Profile



Note: The RECP profile provides a visual overview of resource productivity and pollution intensity shown as change in % compared to the baseline values. Environmental performance is improved when resource productivity increases and when pollution intensity decreases.

## Resource Efficient and Cleaner Production (RECP)

**Resource Efficient and Cleaner Production (RECP)** entails the continuous application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment.

RECP addresses three sustainability dimensions individually and synergistically:

*- Production efficiency*

- > Through improved productive use of natural resources by enterprises

*- Environmental management*

- > Through minimization of the impact on nature by enterprises

*Human development*

- > Through reduction of risks to people and communities from enterprises and supporting their development



## Success Areas

The results of the implemented measures by INCALSA

Principal Options Implemented	Benefits			
	Economic		Resource Use	Pollution generated
	Investment [USD]	Cost Saving [USD/yr]	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
Steam system measures	6,057	2,817	46,720 kWh/year	1,055 gal of fuel/year 13.73 Ton CO <sub>2</sub> /year
Dyeing Jet Installation	35,000	7,100	110,225 kWh/year	2489 gal fuel oil/year 29.60 TonCO <sub>2</sub> /year

## Approach taken

INCALSA was approached to conduct an innovation assessment to determine the three basic technical components of increasing material and energy efficiency to produce more products with correspondingly less waste and pollutants generation, a reduction in toxicity of materials used and safety and risk reduction. Particular focus lied on the innovative solutions in these areas which were generated, implemented, monitored and documented together with the company representative.

## Business case

Although the programme was mainly focused in chemical management, a direct positive consequence was also obtained to optimize energy consumption in the dyeing process, which has increased the value of the final products. RECP not only allows companies to achieve savings and optimize resource use, but also decreases pollution to the environment, which benefits the surrounding community.

Testimony Box	
<b>National Cleaner Production Centre (NCPC)</b>	
The NCPC El Salvador was established in 1998 with the economic support of the Swiss Federal Government and administered by the United Nations Industrial Development Organization (UNIDO). Our organization has almost sixteen years of experience in the implementation of Cleaner Production Programs in El Salvador's industrial sector and up to this date it has provided assistance to over 600 enterprises in different areas, such as: water management, energy efficiency, renewable energy, chemical management, environmental management sytem, solid waste treatment and disposition of different sectors and environmental management systems amongst other services rendered.	
<b>Contact Details</b>	
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## ABOUT RECP EXPERIENCES

Through the joint Resource Efficient and Cleaner Production (RECP) Programme, the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP) cooperate to improve the resource productivity and environmental performance of businesses and other organizations in developing and transition countries. The Programme is implemented in partnership with the Global Network for Resource Efficient and Cleaner Production (RECPnet). This series of enterprise success stories documents the resource productivity, environmental and other benefits achieved by enterprises in developing and transition countries through the implementation of RECP methods and practices.

These successes were achieved with the assistance of the National Cleaner Production Centres, which are part of RECPnet established with support of the UNIDO and UNEP. The success stories employ the indicator set described in *Enterprise Level Indicators for Resource Productivity and Pollution Intensity*, UNIDO/UNEP, 2010. The primer with accompanying calculator tool and further case studies are available at [www.recpnet.org](http://www.recpnet.org), as well as on [www.unido.org/cp](http://www.unido.org/cp) and [www.unep.fr/scp/cp](http://www.unep.fr/scp/cp).