



**TOGETHER**  
*for a sustainable future*

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## RECP Experiences at ASFALCA

Resource Efficient and Cleaner Production (RECP) implementation at ASFALCA led to annual savings of USD 13,694, an investment of USD 678,002.00, and improved product quality and a new product line of Cold Asphalt Mixtures with sales the first year of USD 506,752.00. 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.

ASFALCA 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 ASFALCA on chemical management with the implementation of a new acid storage. Also the management of chemical products has improved as seen in the photographs.



HCl old storage



HCl new storage

### Overview

ASFALCA is a company that formulates asphalt mixtures which are used in road construction or their maintenance; however its main products are Cold Asphalt Mix and Asphalt Emulsions. The first product is a combination of stone aggregates of different size or grain with asphalt. The second product Asphalt emulsions are byproducts of the heated asphalt mixture, hot water and emulsifier which are deposited between the bitumen and water and serves to stabilize the emulsion depending on the type required. The company is located in Sonsonate, in the west of the country, and has 41 workers and is able to supply the local market and the exports.

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 25%, energy productivity increased by 64%. The options implemented allowed the company significantly to increase its production capacity. Moreover, the implementation of RECP options generated annual savings of USD 13,694, an investment of USD 678,002.00, and improved product quality and a new product line of Cold Asphalt Mixtures with sales the first year of USD 506,752.00.

The company implemented a new processing plant for Cold Asphalt Mixtures; this allowed the improvement of the process and the increase in production, helping to improve the sales of this mixture.

The company also improved the HCl storage conditions with a significant impact on the health and safety of workers as well as a

photovoltaic system which reduced electric energy consumption and emissions.

## Benefits

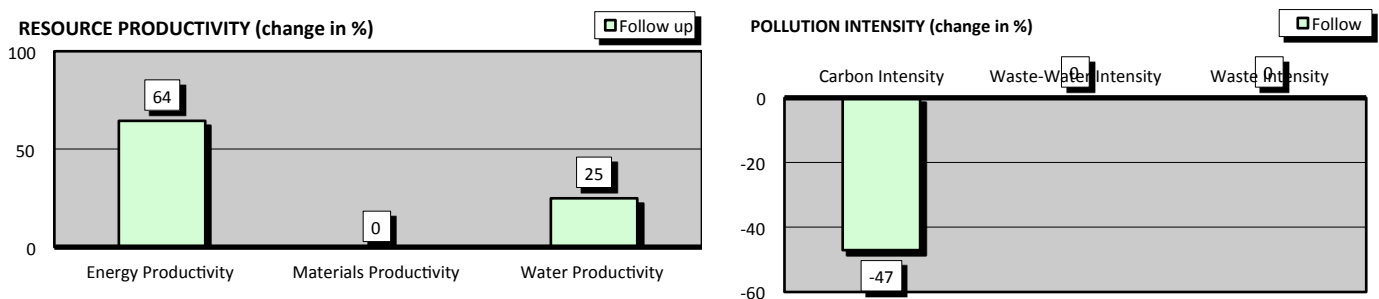
The safety feasibility can be the amount of HCl is to avoid lose or acid waste due to inadequate handling or in case of an accident, which is 1,046 gallons. This measure also reduces the risk of potential accidents that can affect workers; it had an investment of USD 1,725. The economic benefit will be focused on the likelihood of an accident occurring and the entire product that is currently stored improperly which is USD 2,520.

The photovoltaic system produces around 20,000 kWh/ year and is directly used in the company's activities. This represents annual savings of USD 4,062. Also the new asphalt plant for cold mixtures has energy saving around 29,221 kWh per year and 5,102 diesel gallons. This savings represent USD 7,382 and the expected sales are USD 506,800 with a 5% increase per year.

Absolute Indicator	Change (%) Year 1	Relative Indicator	Change (%) Year 1
<b>Resource Use</b>		<b>Resource Productivity</b>	
Energy Use	-23.98	Energy Productivity	64.43
Materials Use	N/A	Materials Productivity	N/A
Water Use	N/A	Water Productivity	25
<b>Pollution Generated</b>		<b>Pollution Intensity</b>	
Air emissions (global warming, CO <sub>2</sub> equivalent)	-57	Carbon Intensity	-47
Waste-water	N/A	Waste-water Intensity	N/A
Waste	N/A	Waste Intensity	N/A
<b>Production Output</b>	25		

**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)
New HCL Storage	1,700	2,250	1,050 gal HCl/year	-
Generate electricity from a solar photovoltaic system	58,000	4,062	20,000 kWh / year	13.81 TonCO <sub>2</sub> /year
Cold asphalt plant	618,302	7,382 Plus sale increase of 506,752	39,221 kWh/year 5,102 gal diesel/year	43.33 ton CO <sub>2</sub>

## Approach taken

ASFALCA 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



# RECP Experiences



## National Cleaner Production Centre (NCPC)

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 system, solid waste treatment and disposition of different sectors and environmental management systems amongst other services rendered.

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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.recenet.org](http://www.recenet.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).