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Advancing resource efficient and cleaner production in Armenia

-The RECP methodology-

Resource Efficient and Cleaner Production (RECP) is the integrated and continuous application of preventive environmental strategies to **processes, products, and services** to increase efficiency and reduce risks to humans and the environment. RECP is all about producing with fewer resources while minimizing environmental impacts and increasing overall productivity. For **Small and Medium-sized Enterprises (SMEs)**, the RECP methodology is an effective instrument to lower production costs whilst improving the SMEs' competitive advantage and applying environmentally friendly practices.

ARARAT-CHANSIN LLC
- Road-building company -

Company overview

Address: 0605, Ararat Marz, Avshar village
Key products: Asphalt, lime stone powder, building sand, and crashed gravel
No. employees: 57
Main markets: Armenia
Founding year: 1999



"Ararat-Chansin" is well-renowned in the construction and building materials sectors. It provides services for the construction, installation, and repair works of roads, and it manufactures various products such as asphaltic concrete, building sand, crushed stone, and mineral powders. The company extracts its materials from its own quarry and uses advanced technological equipment for the industrial production of construction materials. Motivated to achieve a more energy-efficient production facility (integrated into its growth plans), the company participated in the RECP demonstration project under EaP GREEN (2013-2017). This publication shows the company's experience reported after the monitoring exercise conducted in 2021, four years after the programme ended.

Benefits

- **Implementation of 7/8 RECP options**
- **Total economic saving of 193,394 EUR/year**
- **General payback period of 4.3 years**
- **Reduction of resource consumption per product unit (asphalt production):**
Electricity: 73% | Natural gas: 42 % | Water: 16 %
- **Improved use of raw materials and working conditions**

Action implemented by:





The project's approach

The **RECP assessment** examined the production site, and identified 8 options out of which 7 were implemented:

1. Replacement of the electrical heating in bitumen receiving system with natural gas technology
2. Machinery maintenance and repair
3. Improved building envelope thermal insulation
4. Replacement of doors and windows
5. Improved lighting system and the introduction of LED
6. More-efficient heating system based on natural gas and hot water circulation
7. Renovation of old (worn-out) main production equipment



Replacement of the electric heating system with a natural gas one: options **1** and **6** proposed natural gas as the best energy source for heating. A natural gas boiler was incorporated, pipelines and reservoirs were properly isolated, and a recirculation of hot water was achieved for a better efficiency.

Improving building isolation: options **3** and **4** addressed the issue of heat losses from the heated areas into the external environment by reducing the energy consumption.

Repairing and modernization of the equipment and facility: options **2, 5,** and **7** were focused on upgrading the production facility. Lighting systems were retrofitted and the LED technology was introduced. Old and worn-out machinery was evaluated, concluding with actions of either repair or substitution. As well, the company also opted for upgrading its facility by installing a new asphalt production line, including a new vehicle fleet. As a result, asphalt production increased four times, all while keeping the energy and natural gas consumption in considerably low rates.

Saving achievements

With the support of trained technical advisors and company staff, the company received training and personalized assistance to adopt the RECP principles. They resulted in the following achievements:

ECONOMIC KEY FIGURES

Investment (Euro)	Saving (Euro/year)
828,280	193,394



RESOURCE SAVINGS

Water (m ³ /year)	Material (t/year)	Waste (t/year)	Electricity (kWh/year)	Thermal Energy (kWh/year)	CO ₂ -eq (t/year)
-	127	-	1,844,901	5,367,631	1,895



Other Opportunities

During the monitoring exercise, the opportunity of an on-grid PV solar system has been identified. In the found operational conditions, the team concluded that a system with a nominal capacity of 460 kWp could generate an annual cost saving of 35,411,000 EUR/year. Investment in this technology is not a quick return in Armenia, with a payback period of approximately seven years. However, it ensures access to a renewable source for at least 20 years.

The introduction of RECP has been part of the EU-funded programmes: **EaP GREEN** (2013-2017) and **EU4Environment Action** (2019-2022) executed by UNIDO. In this context, "ARARAT-CHANSIN" joined the RECP training and assistance programme under EaP GREEN, and was monitored under EU4Environment. Follow-up visits have also been conducted under EU4Environment, to check the implemented RECP options after the EaP GREEN Programme ended. EU4Environment helps the six EaP partner countries preserve their natural capital and increase people's environmental well-being by supporting environment-related action, demonstrating and unlocking opportunities for greener growth, and setting mechanisms to better manage environmental risks and impacts. For more details, visit: www.eu4environment.org



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