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**ALF-CEMIND Project:
Supporting the use of alternative fuels in the cement
industry
Specific Support Action**

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**Assessment and Analysis of Alternative Fuels and
Raw Materials in Bulgarian Cement Industry**

EXECUTIVE SUMMARY

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Executive summary

The cement industry is a very energy intensive industry. The energy bill represents over 49% of total production costs. For this reason in the past few decades considerable efforts to reduce energy consumption were made. Now the cement industry is close to the limit of what can be achieved through technical improvements. In order to keep its competitiveness the cement industry tries to combine the energy efficiency and the use of alternative fuels and alternative raw materials.

Many different types of waste are burnt in cement kilns: used tyres, rubber, paper waste, waste oils, waste wood, sewage, animal meal, etc.

Because of the delicate balance and stability that are required by the cement-making process, the cement industry has concentrated on wastes that are sufficiently homogenous rather than burn less homogenous, mixed household waste. A lot of these wastes originate from other industries and, of course, from agriculture.

The benefit to the cement industry is fairly obvious. Even if it often needs to be treated and made sufficiently homogenous to be co-processed in a cement kiln and despite the process investment and special maintenance which this may require.

The waste is usually cheaper than primary fossil fuels. Such cost varies of course, with different type of waste and local conditions of logistics (gathering, storage, transportation.)

In Bulgaria during the last few years with the transition of Bulgarian economy to market principles, all Bulgarian cement production capacities were bought by three leading European cement companies:

Italcementi Group owns “Devnya Cement” SC and Vulkan Cement SC;

TITAN Cement – Greece owns Zlatna Panega Cement;

Holcim Group owns: Holcim Bulgaria SC (former Beloizvorski Cement) and Plevenski Cement SC.

All of these leading companies after the privatization have invested in increasing of plants’ quality and environmental protection. The companies have respective technologies and in most of the plants investments have been made for utilization of alternative fuels and raw materials. Four out of five cement plants in Bulgaria have complex permits for the use of alternative fuels in the furnaces.

In spite of the efforts of the new owners of the cement plants in Bulgaria to utilize alternative fuels they still have very small substitution rates. The reason for unsatisfactory rate of utilization of the alternative fuels and raw materials in the Bulgarian cement industry is non-sufficient information and security of the waste market. Due to this, Sofia Energy Centre made assessment and analysis of the solid wastes utilized as alternative fuels in the cement industry and determined the barriers and their overcoming.

The following **major barriers** for utilization of wastes as alternative fuels and raw materials can be seen from the analysis:

- No incentives for collection and sorting of waste.

The logistics of wastes needs significant improvement in order for the cement plants to be supplied with the necessary waste streams regularly and from regional sources in order to be economically viable.

- Unreliable and in most cases missing data on waste sources and treatment facilities.
- No implementation of Waste Action Plan.

As waste incineration for energy recovery is relatively further on the waste hierarchy, some of the waste streams (such as car tyres) are reused or recycled and do not end up in the cement plants.

- The waste management and climate change legislation in Bulgaria both favor the introduction of alternative fuels from waste in the cement plants. Different measures are envisaged for organizing the waste management in a way to encourage such utilization. However for the time being additional efforts are needed to enforce the legislation.
- The state and municipalities do not play the necessary role in improving the organization of waste management.

The following **main conclusions** can be made:

- Technologies for utilization of wastes as alternative fuels and raw materials already exist in Bulgarian cement industry.
- The potential of substitution of conventional fuels is assessed at about 40%, having in mind the use of new technologies and the fact that in Bulgaria currently almost no waste is used in the cement plants.
- All stakeholders show interest and invest in co-processing of waste in cement plants.
- Most of the cement plants have made the necessary investments for introduction of technologies for use of alternative fuels and have been issued complex permits by the Ministry of Environment and Water for use of such fuels. There are successful practices of using car tyres, animal meal, and industrial waste as alternative fuels in some of the plants. In the case of animal meal and car tyres the state is envisaged to pay for their incineration.
- The incentives for utilization of wastes as alternative fuels and raw materials are:
 - Economic: the high energy intensity of the industry and the rising energy prices make it more and more economic to use alternative fuels;
 - Apart from the economic benefits for the Bulgarian cement industry, utilization of wastes can reduce the environmental problems due to landfilling and help in meeting the international environmental commitments.
- The State adopted policies for encouragement and support the use of alternative fuels and raw materials in the cement industry. The Bulgarian legislation is also in complete harmonization with the EU requirements. However, there is still ineffective enforcement and much more should be done for its practical implementation.

- The State and the municipalities have to play a significant role in improving the organization of waste management, development of infrastructures and mechanisms for waste logistics.