

Reducing Greenhouse Gas Emissions through the Use of Biomass Energy in Northwest Slovakia

***BIOMASA Association of legal entities/
Regional Energy Management Agency Zilina Slovakia***

Summary

The project presents complex solution for the implementation of biomass heating and establishment of the market with biomass (wood pellets) in Slovakia. It is focused on creation and management of innovative integrated logistics system of wood waste (sawdust) collection, transport, processing to wood pellets, the distribution of wood pellets and delivery of heat to the end users. The project was originally located in Northwest Slovakia, but it was already extended also to the East Slovakia. The project is built on the strong partnership, which has been created inside BIOMASA Association.

The project is co-financed by the UNDP-GEF, Ministry of Environment of the Slovak Republic, member municipalities, bank loan and the financing from European Union, through the Program Life III – Environment is prepared.

End-user area	Target Audience	Technical
<input type="checkbox"/> New buildings	<input type="checkbox"/> Citizens	<input type="checkbox"/> Energy efficiency
<input type="checkbox"/> Refurbishment of buildings	<input type="checkbox"/> Households	<input checked="" type="checkbox"/> Heating
<input type="checkbox"/> Transport and mobility	<input type="checkbox"/> Property owners	<input type="checkbox"/> Cooling
<input type="checkbox"/> Financial instruments	<input type="checkbox"/> Schools and universities	<input type="checkbox"/> Appliances
<input type="checkbox"/> Industry	<input type="checkbox"/> Decision makers	<input type="checkbox"/> Lighting
<input type="checkbox"/> Legal initiatives (municipal regulations, directives, etc)	<input checked="" type="checkbox"/> Local and regional authorities	<input type="checkbox"/> CHP
<input type="checkbox"/> Planning issues	<input type="checkbox"/> Transport companies	<input type="checkbox"/> District Heating
<input type="checkbox"/> Sustainable communities	<input type="checkbox"/> Utilities	<input type="checkbox"/> Solar energy
<input type="checkbox"/> User behavior	<input type="checkbox"/> ESCOs	<input checked="" type="checkbox"/> Biomass
<input type="checkbox"/> Education	<input type="checkbox"/> Architects and engineers	<input type="checkbox"/> Wind
<input checked="" type="checkbox"/> Other	<input type="checkbox"/> Financial institutions	<input type="checkbox"/> Geothermal
	<input type="checkbox"/> Other	<input type="checkbox"/> Hydro power
		<input type="checkbox"/> Other

Context

The establishment of biomass as a possible source of heating in Slovakia is limited by many obstacles and barriers (e.g. lack of information and awareness, which leads to an unwarranted prejudice toward the use of biomass, reduced prices of natural gas for consumers by the State donation, high prices of pellet-fired technology, atomization of wood waste producers). The price of a new type of fuel, for example the biomass one, which includes all production and operational costs, is not competitive with the price of natural gas due to State subsidies.

Due to all of these barriers, the introduction of new type of pellet heating in the Slovak market is very difficult. Therefore, a “first step” overcoming the barriers is necessary. It could be the successful project implementation where people can see in practice that the pellets are competitive and cost-effective fuel usable for heating.

Objectives

The project presents a complex solution for the implementation of biomass heating and establishment of the market with biomass (wood pellets) in Slovakia. It is focused on **the creation and management of an innovative integrated logistics system of wood waste (sawdust) collection, transport, processing to wood pellets, the distribution of wood pellets and delivery of heat to the end users.**

The aims of the project were:

- To demonstrate a new way for introducing an alternative environmentally friendly fuel, competitive with fossil fuels and to create a market with wood pellets in Slovakia;
- To contribute to the reduction of greenhouse gas emissions in Slovakia by using Biomass – specially wood pellets for heating;
- To substitute fossil fuels by environmentally friendly fuel - wood pellets in public building in member municipalities and to regulate the heating systems;
- To increase public awareness and interest for establishing biomass heating in Slovakia through using local wood waste residuals.

Process

To overcome the barriers and bring forward the new fuel, we have to solve production and consumption of pellets as one integrated unit. We have taken the initiative and have established the association of municipalities (above all), which are owners of the public buildings and need to solve the problem with non-ecological and inefficient heating by using a new environmentally friendly fuel – wood pellets. But due to the unavailability of such fuel in Slovakia, high prices of it from import, expensive technology for automatic pellet boilers, lack of finance for investment and lack of information about available Slovak and foreign financial sources, municipalities would not manage it by themselves individually.

We have started with preparation of the big investment project involving production of wood pellets and reconstruction of boiler rooms in the Association member municipalities.

Within the project, a production plant for wood pellets (Central Processing Unit – CPU) will be constructed and 42 boiler rooms in BIOMASA member municipalities combusting coal/coke will be replaced by the pellet-firing ones. The CPU will ensure the following activities:

- Collection and transport of wood waste in the form of dry and wet sawdust;
 - Processing of sawdust to the form of pellets in the technology process;
 - Distribution of pellets to the boiler-rooms localized in the municipalities participating in the project;
 - Export of pellets;
 - Central co-operation, direction, monitoring and service for boiler-rooms.
- The central PC control system will operate and control collection of sawdust from collection points in small producers in the region and distribution of pellets to the BIOMASA member municipalities.*

Reconstruction of 42 boiler rooms is dividing into following parts:

- dismantling the existing systems;
- construction works, groundwork, connection of buildings to central heating system;
- preparation works and reconstruction of boiler rooms;
- upgrade of the heating systems, regulations of heating in the buildings;
- supply and installation of new boiler plants;
- energy efficiency measures.

The Association will be the owner of newly constructed production unit for wood pellets and the technology in reconstructed boiler rooms in the member municipalities and it will sell the heat to the end users.

The reconstruction of the boiler room in Klokocov and Luky were realized as the first pilot projects in Slovakia. These projects were supported by the Danish Environment Protection Agency (DEPA) and Danish Ministry of Environment. At the beginning period, the wood chips were used for the heating.

From February 2000, the wood chips were substituted by the wood pellets. The maximum content of the ash that occur during the wood chips combustion was 2%. Regarding the wood pellets combustion, the ash content decreased to 0,5-1%.

Financial resources and partners

The professional staff of the BIOMASA Association has prepared the project and has ensured the sources for its financing.

The project financing consists of several sources:

Global Environmental Facility (GEF)	grant	854 780 EUR
Prvá komunálna banka (First Communal Bank)	loan	2 510 073 EUR
Ministry of Environment of SR	subsidy	990 780 EUR
EC – LIFE III Program	grant	1 011 900 EUR
Members of BIOMASA Association	own sources	730 927 EUR
TOTAL		6 096 460 EUR

EUR= 41 SKK

The BIOMASA Association is also the implementing agency for the project, provides services, carry out activities and promotes the project as it is described in the project document. The project will nationally devolve upon the Ministry of Environment of the Slovak Republic, which is the Executing Agency. A Project Steering Committee oversees the project. Now we have just started with real implementation, in which we need to communicate and co-operate with all co-financers, bank providing the loans, the Association members, suppliers and other bodies. BIOMASA Association closely cooperates with Regional Energy Management Agency in Zilina, which was founded under SAVE II Program.

Results

Expected results of the project.

- Realization, demonstration and verification of the new innovative logistics system for establishment of pellet heating in Slovakia that could be used in other CEE countries;
- Annual production of 12,000 tons of pellets and their consumption in the region;
- Increased re-utilization of local wood waste residuals land filled in the region in amount of 18,000 tons;
- Upgrading the old heating system and improvement of energy efficiency in the public buildings;
- Increased job opportunities in the region with the present unemployment rate of 30 % (at least 12 new jobs directly created in CPU);
- Improvement of air quality by annual reduction of: CO₂ emissions in 31, 000 tons, methane emissions (equal to 45,60 tons of CO₂ equivalent. emissions), SO₂ - 106 tons, NO_x - 30 tons, particulates - 154 tons and CO - 690 tons;
- Biomass Information Centre in CPU promoting biomass usage, providing consultancy on the basis of practical experiences gained from the project;
- Strengthening local economics;
- Increased interest and general public awareness in biomass use;
- Enforcement of legislation improvement in the field of renewable energy sources usage in Slovakia.

Lessons learned and repeatability

The whole project is possible to reproduce in other region of Slovakia or other countries, where the market with bio-fuels is still not developed. The implementation of this or similar integrated system will provide solution to problem of wider biomass using also in other future Community members - present candidate states, where similar conditions and problems (in energy sector, public administration reform, improving of environment) of transforming countries occurs as in Slovakia. That's why it may concerns also present Member states.

On the base of the successful operation of boiler rooms, public interest to use pellets for heating will increase. Similar integrated system as in our project can be used for introducing and establishment of new products also in other sectors.

Sustainability of the project logistics system is ensured by the possibility to enlarge the network of sawdust suppliers as well as consumers of heat as new members joining the Association. Furthermore the project is based on using renewable energy local source processing locally in the region with more than 60 % share of forest.

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