

THE SAWDUST AND WOOD WASTE MANAGEMENT FROM WOOD PROCESSING INDUSTRY

Derecichei Laura*, Bodog Marinela*, Lucaci Codruta* , Dubău Calin*

*University of Oradea, Faculty of Environmental Protection,
26 Gen. Magheru St., 410048 Oradea, Romania

Abstract

This paper presents the wood waste management and increase the level of capitalization of these, especially of sawdust, reducing the negative aspects on the environment determinate by the land filling activities from wood processing industry through stimulating the investment for processing installation and waste capitalization.

Key words: waste wood, pollution, sawdust management, waste valorisation, sawdust

INTRODUCTION

The wood combustible is provided by wood quantities from cutting tree crowns which do not have industrial use and from the wood quantities of an inferior quality.

The woody debris provided by wood processing industry which can be used as energy sources are: rind, pieces of trunk, sawdust, veneer residue, shavings (Botnariuc N., Vădineanu A., 1982).

The wood sources used for energy purposes are:

- firewood from rough wood for industry;
- firewood from forestry exploitation;
- waste wood resulting from primary processing of wood (timber, plywood, veneer production);
- waste wood resulted from secondary processing of wood (furniture, doors-windows, scrap boards, parquet, etc.);
- waste wood as a result of chemical treatment.

MATERIAL AND METHODS

Directive 1999/31/CE regarding waste storage has the main purpose of establishing the measures that Member States have to adopt in order to prevent or reduce waste production, and recycling or their use as an alternative energy source, in order to reduce adverse effects over the environment and general human health determined by the activities of waste storage (Directive 1999/31 CE).

Through the management of waste wood and sawdust, compliance with the Community legislation is being applied and also the fulfillment of obligations that Romania undertook in the field of waste management by the

Treaty of Accession therewith compliance with the sustainable development in accordance with the provisions of the Rio Declaration and Kyoto Protocol, in which Romania is a signatory.

Data from this study were obtained from Exmobi LLC, sawdust management plan in 2005, with prospects until 2012.

It pursues further reduction of the adverse effects on the environment caused by the activities of wood waste storage resulting from wood processing industry, through the stimulation of investment funds for modernization, re-technologization and acquisition of equipment for processing and recovery of such waste (OUG 196/2005, H.G. no. 443/2004, GD nr.1093/16.08.2006).

These investments will contribute to improve the quality of the environment and, at the same time, to develop the areas in which this will be accomplished.

RESULTS AND DISSCUSION

Wood waste management joins in the context of the necessity of integrating environmental policies in the implementation of sectoral and regional policies and developing a strategy for long term sustainable development (H.G. No. 1429/2004, GD. 856/2005).

According to the data provided by the National Institute of Wood, sawdust waste resulting from the processing of wood at the moment is larger than 1 billion mc. and it will get to 1.5 billion mc after the year 2012. These types of waste are insufficiently exploited, leading to the appearance of numerous sawdust dumps and other wood waste that pollute soil and water courses (10).

Wood waste pollution has as a consequence the removal from the productive circuit of some surfaces of land on which the vegetation is disappearing or is being replanted with difficulty, changing the normal water surface circuit and spreading dust in the atmosphere (Pickin, J., 2008, Rives, J. et all 2010, Stehlik, P., 2009).

As a result, the objectives to be achieved by the year 2013 according to the national plan for waste management, material or energy recovery have reached about 50% of biodegradable waste and energy recovery at 50% of the amount of sawdust (Law No. 220/2008, 2008/98/E.U).

Romania also aims to achieve a rate of 12% of energy produced from biomass of the total energy produced in the year 2012 (H.G. No. 1069/2007, the law No. 220/2008).

In terms of emissions of particulate matter, lighters and crates are a neutral fuel, whereas it is considered that the firing into the air can release the same quantity of CO₂ which plants have absorbed from the atmosphere in the process of photosynthesis that generated the biomass used to obtain

them (Vădineanu, A., 1999, Wehry A., Bodog M, 2004).

As a result, the production of wood waste for recovery investments will contribute to improve the quality of the environment and also to the economic development of those regions (Emphatically No. 621 of 23 June 2005).

Table 1

The minimum objective and global recovery by recycling

Year	The minimum objective through recovery by recycling/type of material		The global recovery through recycling %
	Paper and cardboard (%)	Wood (%)	
2010	60	12	42
2011	60	15	46
2012	60	15	50
2013	60	15	55

Wood waste management through the process of lighting requires achieving lighters/crates quality which must comply with international standards of quality, so as to fall within the parameters admitted to the outlets. Stages of production process (collection, transport, storage and loading of biomass, milling, drying, conditioning, pressing and final storage) must comply with environmental legislation and not generate emissions of suspended particles, to be reintroduced in production.

Purchased facilities must comply with European quality standards and ensure functioning at optimal parameters (H.G. No. 1892/2004).

An important condition is the location of the machinery producing vibration on elastic foundations and those that produce loud noises, in closed spaces in the rate of 50%. Also, the storage of waste wood shall be made only on concrete platforms in premises specially equipped. Quantities of waste wood processed should not exceed the quantities of waste wood collected in the region where you build our lighters. You also need to take into account the existing facilities in that area.

CONCLUSIONS

The conclusions are the following:

- increasing the use of wood waste, particularly sawdust;
- reducing the risk of pollution by waste wood and soil water;
- reducing emissions of greenhouse gases and energy saving of fossil fuels (coal, oil, natural gas) by replacing them with organic fuels from biomass;
- reducing waste storage areas wood;
- conservation and protection of ecosystems;
- promoting the use of renewable energies;
- reduce the cost of electric and heat energy by increasing energy efficiency

as a result of the use of crates produced from biomass;
- compliance with the provisions of the Declaration of RIO and Kyoto treaty to which Romania is a party;
- the objective for the year 2012, 12% of energy to be produced from biomass.

REFERENCES

1. Art. 4, para. (3) of the EGO 196/2005.
2. Botnariuc N., Vădineanu A., 1982, Ecology, Bucharest, Didactic and pedagogic Publishing.
3. Directive 1999/31/CE.
4. GD. 856/2005 regarding records waste management for approving the list of waste.
5. GD nr.1093/16.08.2006 Establishing the requirements for minimum safety and health protection of workers from risks related to exposure to carcinogens or mutagens at work.
6. H.G. No. 443/2004 on the promotion of the production of electricity from renewable sources of energy.
7. H.G. No. 1069/2007 on the approval of the energy strategy of Romania for the period 2007-2020.
8. HG No 1892/2004 for the establishment of the system to promote the production of electricity from renewable energy sources, with amendments and additions of HG nr. 958/2005 and HG nr.1538/2008.
9. H.G. No. 1429/2004 approving the regulation for certification of origin of electricity produced from renewable energy sources.
10. Emphatically no. 621 of 23 June 2005 on the management of packaging and packaging waste.
11. Kirkeby, J.T., Birgisdottir, H., Bhandar, G.S., Hauschild, M., Christensen, T. H., 2005, *Recycling revisited-life cycle comparisons of global warming impact and total energy use of waste management strategies*, Resources, Conservation and Recycling 44 (2005) 309-317.
12. Law No. 220/2008 for establishing the system to promote energy from renewable sources of energy, 2008/98/E.U.
13. Pickin, J., 2008, Representations of environmental concerns in cost-benefit analyses of solid waste recycling, Resources, Conservation and Recycling Vol.53: (79-85).
14. Rives, J., J. Rieradevall, X. Gabarrell, 2010, LCA comparison of container systems in municipal solid waste management, Waste Management Vol. 30: (949-957).
15. Stehlik, P., 2009, Efficient waste processing and waste to energy: challenge for the future, Clean Techn Environ Policy (2009) 11:7-9.
16. Vădineanu, A., 1999, Sustainable Development: Theory and Practice, University of Bucharest.
17. Wehry A., Bodog M, 2004, Recycling of waste water, Publishing Horizons University, Timisoara.
18. www.inl.ro.
19. <http://www.wasteonline.org.uk/resources/InformationSheets/Wood.htm>.