

TGF Project Profile : Zheshart Biomass Fuel Switch, Komi Republic, Russia

Introduction

The Zheshart biomass fuel switching project is a Joint Implementation project developed between the Russian Federation and the investor countries of the Baltic Sea Region Testing Ground Facility (Iceland, Norway, Sweden, Denmark, Finland and Germany). The JI project was prepared by NEFCO on behalf of TGF (in its capacity as Fund Manager to the Facility). The project developer and owner is the privately owned CJSC Zheshart Plywood Factory, one of the largest plywood and particle board manufacturers in Russia.

The project has been developed in cooperation with Norsk Energi and the Komi Energy Efficiency and Cleaner Production Partnership. It was undertaken as part of Nordic Council of Ministers funded JI Capacity Building project in 2005.

At present the Closed joint-stock company (CJSC) "Zheshart Plywood Factory" has its own boiler-house producing heat to satisfy both the needs of both the factory and the whole settlement where it is located. The current boiler-house comprises 6 boilers. Four of the boilers use natural gas as fuel, whilst the other two use wood waste (tree bark and waste from the production process). These two wood fired boilers cannot, however, burn sawdust, as this requires a very specific boiler design. A significant amount of sawdust is generated at the factory (approx. 34.5 tonnes/day), which is not currently used as fuel and is therefore being taken to a local solid waste disposal site.

The Project Activity

This small scale JI project involves installation of a new boiler within the existing boiler house of the CJSC Zheshart Plywood Factory that would use the sawdust produced at the factory as fuel, thereby displacing the use of natural gas. The new biomass boiler will be physically distinct from the existing renewable energy units, and will not share a common renewable resource. The four gas fired boilers would remain and be used for standby capacity.

Project Benefits

The project will therefore lead to:

- Use of the sawdust generated on-site by CJSC Zheshart Plywood Factory;
- Reduction in the use of natural gas, thereby leading to a reduction in CO₂ emissions;
- Elimination of transport of sawdust to the dumping site, thereby leading to a reduction in CO₂ emissions from vehicle exhaust;
- Elimination of dumping of the waste sawdust, thereby leading to a reduction in greenhouse gas emissions (methane) from decomposition of the waste sawdust;
- Avoiding the need to allocate land for a new solid waste disposal site for the waste sawdust;
- Reduction in the cost of energy production for CJSC Zheshart Plywood Factory;
- Reduction in the cost of energy supplied to the residents of the local settlement.



Zheshart Plywood Factory, Komi Republic

Technology

The project in question foresees the installation of a biomass boiler in the existing boiler-house for combustion of sawdust, with a capacity of 7 MWth. The sawdust will be transported pneumatically from the MDF (Medium Density Fibreboard) and particle board sawdust bunkers to a filter with a retention bunker installed near the boiler-house. A pulverized fuel burner is constructed according to the principles of a gas burner. The design of the furnace has been adapted to provide complete combustion of sawdust, being elongated with an additional primary furnace.

Nature of Emission Reductions

The proposed small-scale project has two emission reduction components. The project will replace the existing fossil fuel (natural gas) fired boiler with a biomass (sawdust) fired boiler (Component I), leading to a reduction of anthropogenic emissions of greenhouse gases.

The fuel to be used by the new biomass boiler is sawdust, which is currently treated as a waste product. Disposal of this sawdust leads to significant emissions of methane resulting from anaerobic degradation. Generation of methane will be significantly reduced once the proposed small-scale project is implemented, as the waste sawdust will be used as fuel for the new biomass fired boiler and will no longer require disposal (component II).

Both components included in this renewable energy project are part of the Joint Implementation (JI) project and will lead to a reduction in CO₂ and CH₄ emissions estimated at approximately 75,000 tonnes in total over the Kyoto commitment period (2008-2012).

The project uses as reference the following small scale CDM approved baseline methodologies:

- Component I - Installation of biomass boiler: AMS-I.C, "*Thermal Energy for the user*"
- Component II - Waste biomass disposal: AMS-III.E, "*Avoidance of methane production from biomass decay through controlled combustion*"

For a full explanation of the methodology used please refer to the Project Design Document.

Contribution of Carbon Finance

The total capital requirement of the project is met through the factory's own equity contribution (23%) and a NEFCO Cleaner Production Loan. The latter will be supported by carbon contribution from the TGF, which forms an integral part of the financing package linked indirectly to the NEFCO loan.

For Further Information

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For General Information on the TGF, visit <http://www.nefco.org/tgf>