



Report No AB5

Updated Project Information Document (PID)

Project Name	BULGARIA-WOOD RESIDUE TO ENERGY
Region	Europe and Central Asia Region
Sector	Renewable energy (50%); Power (50%)
Project ID	P075560
Supplemental Project	
Borrower(s)	SVILOSA AD
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1. Country and Sector Background

The challenges facing the Bulgarian energy sector include

- Energy intensity:** Bulgaria is an energy intensive economy. Energy intensity can be measured by the amount of primary energy resources consumed to produce one unit (US\$) of GDP. Bulgaria's energy intensity is around 1.2 kg of oil equivalent (kgoe) for US\$ 1 of output that is high compared to Hungary (0.54 kgoe/\$), the Czech Republic (0.74 kgoe/\$), and Poland (0.61 kgoe/\$). To be competitive, the Bulgarian economy would have to be less energy intensive through reforms in the energy sector and deliberate steps to improve energy efficiency.

- **Reliance on imported energy resources:** Bulgaria imports about 59% (2000) of its energy resources – oil, gas, and some coal – using foreign currency. Further, the proposed closure of the Kozloduy nuclear power plant (units 1 and 2 in 2003; and units 3 and 4 in 2006) will make the country more dependent on imports of energy resources. The country has virtually no domestic supply of oil (1,000 barrels per day production) and only modest quantities of natural gas (5.7 billion m³ reserves and 29 million m³ annual production). The main domestic energy source is lignite and the country has reserves of around 2.5 billion tons with an annual production of around 30 million tons. However, the heating values of domestic lignite are typically low. For instance, the lignite from Maritsa, the largest mine in the country, has a value of around 1,500 kcal/kg.
- **Inadequate air quality:** Compared to the early 1990s, air pollution has been significantly reduced in the country due to a decline in industrial activities. However, Bulgaria has a number of ‘hot spots’ due to air pollution. It is estimated that about one-third of the population is exposed to harmful air quality. Particulates and SO₂ are the most serious pollutants where the World Health Organization’s guidelines are often not met. Also, Bulgaria is faced with a major challenge to meet EU’s environmental requirements. The EU Directive on Integrated Pollution Prevention and Control (IPPC, Directive 96/61/EC) was adapted as national legislation in 2002. As per this legislation, integrated permits for all manufacturing companies will be issued in a phased manner with full compliance by 2012 and as a result these enterprises are facing mounting investment requirements to meet EU environmental standards.

The Government Strategy

Bulgaria’s energy strategy is outlined in the country’s Energy Environment Review (October 2002). This strategy is currently being implemented and steps are being taken to decrease energy intensity, maximize the utilization of domestic energy resources, and improve the environment. The primary mechanism for decreasing energy intensity is reform of the energy sector, which includes pricing reforms that would create an incentive for economic consumption and the introduction of the private sector that would promote more efficient and cost effective operations. The Government has also drafted an Energy Efficiency Law, in line with EU policies, which is expected to be sent to the Parliament by the end of 2003. In addition, the Government is preparing an Energy Efficiency Strategy that will define specific actions that will help to reduce the energy intensity in the country.

The Government recognizes that complete energy independence is not feasible, but diversification of energy sources and maximization of domestic resources are essential elements of the country’s energy strategy. The Government plans to further develop hydroelectric resources, as well as renewable energy sources - biomass, wind, geothermal and solar. This will make the renewables and hydroelectric sources contribute to about 25% of the energy production in the long term, compared to the current 15%. There is also a policy to support combined heat and power generation, for better fuel efficiency, in the industrial and district heating sectors.

With regard to mitigation of environmental impacts, the Government has already re-aligned its environmental regulations to EU Directives and is in the process of implementing them through the phased permitting process. While the full implementation may take up to 10 years, the directives provide the regulatory basis for improving the environment. The country has also been successful in mobilizing EU grant financing for energy efficiency measures. For instance, the EU recently agreed to support Bulgaria with a Euro 30 million grant to make improvements in the Sofia District Heating Company.

2. Objectives

The overall objective of the project is to reduce emissions of greenhouse gases generated at Svilosa. This objective would be achieved through: a) substitution of coal with residual wood as a fuel for power and heat generation resulting in a reduction of greenhouse gas emissions; and b) depletion of a stockpile of wood residue which will reduce methane emissions.

Emission Reduction units (ERs) will be sold to the Prototype Carbon Fund (PCF) following annual independent certification of the emission reduction achievements. ERs will be certified under the provisions of the Kyoto Protocol, which is a multilateral agreement to reduce greenhouse gases. The Kyoto Protocol is not yet in effect since sufficient countries, representing 55% of Annex B (Industrialized country) CO₂ emission levels (1990), have not yet ratified the agreement. However, with the ratification by Russia, expected in 2003, the Kyoto Protocol would be effective. Irrespective of the regulatory risk of the protocol not being effective, PCF has pledged to purchase the ERs. This precludes any risks to Svilosa arising from the delays in effectiveness of the Kyoto Protocol.

3. Rationale for Bank's Involvement

PCF projects are administered by the Bank as per the instruments of the PCF. The Bank has experience in energy and environment matters in Bulgaria and is also familiar with global trends related to greenhouse gas reduction. The Bank has carried out similar projects in the past - addressing global environmental issues through grant facilities. The knowledge and experience of the Bank, both with regard to PCF projects as well as general economic and sectoral conditions in Bulgaria, benefitted project preparation and will support project implementation.

4. Description

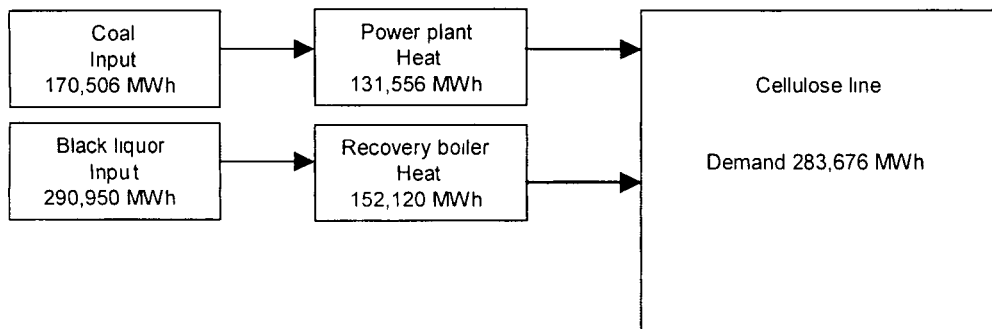
The Project

Component A: Biomass Boiler The project will add a 14 MW biomass boiler to the Svilosa plant to generate heat. The biomass boiler will be fueled by wood waste from two sources: (i) waste generated in the production process; and (ii) waste stockpiled on site since 1994. This will reduce the coal consumption at the CHP plant (Figure 1).

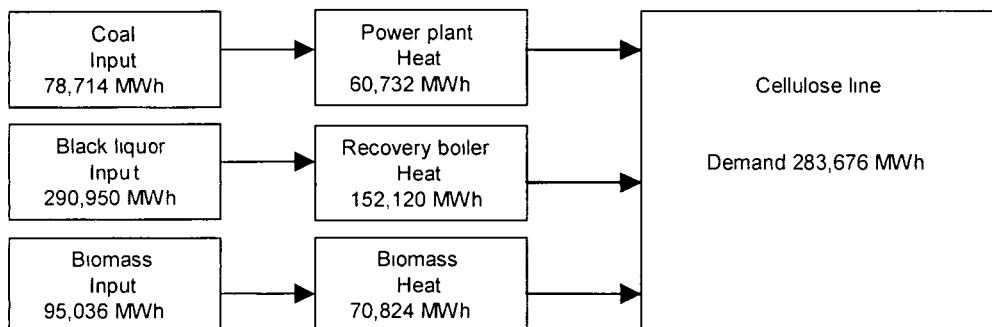
A biomass boiler will be built to utilize the wood wastes produced at the plant and supply heat to the cellulose part of the production process. The biomass boiler will displace approximately 13,679 tons/year of coal used in the CHP power plant, reduce greenhouse gas (GHG) emissions associated with using coal in power production, and reduce methane emissions associated with stockpiling waste by using wood wastes as feedstock. Certified greenhouse gas emission reductions will be sold to the PCF.

Component B: Emission Reduction Monitoring and Certification: A Baseline Study has been conducted and a Monitoring Plan (MP) has been prepared to guide the monitoring and verification process during project implementation. The MP includes clearly defined indicators to observe and verify the continued performance of the project. The verification process involves periodic auditing of monitoring results, the assessment of achieved emission reductions and the project's continued conformance with all relevant criteria. Verification will be conducted at regular intervals during the operational phase of the project by a third and independent entity. Verified emission reductions will be certified to provide assurance that, in the verification period, the project has achieved the stated ERs in compliance with all relevant criteria.

Figure 1: Heat and Fuel Requirements for the Svilosa Plant - Minimum ERs Scenario



Heat Supply to Cellulose plant before the installation of the biomass boiler



Heat Supply to Cellulose plant after the installation of the biomass boiler

Emission Reductions

The actual ERs would be dependent on the biomass produced at Svilosa which is linked to the market and production of the company. The ERs are also dependent on the volume of methane generated from the stockpiled wood wastes. In the Term Sheet signed between the PCF and Svilosa, PCF has agreed to purchase a minimum ERs of 500,000 tCO₂eq over the period 2004 to 2012 with an option to purchase up to 1,000,000 teCO₂eq of ERs

5. Financing

	Total (US\$m)
BORROWER	\$3.64
IBRD	
IDA	
Total Project Cost	\$3.64

6. Implementation

The project will be implemented as per the Emissions Reduction Purchase Agreement (ERPA) signed between Svilosa and the Bank, as trustees of PCF. A Monitoring Plan (MP) will also be agreed between the parties to the ERPA. The ERPA and MP will define the quantity, price and other delivery conditions for ERs to be purchased by the PCF as well as monitoring and verification systems and methods. Through a Host Country Umbrella Agreement, between Bulgaria and the Bank, the Government has also taken on responsibilities to monitor and report progress on the project.

The Project has been verified by an independent third party making the ERs eligible for purchase by the PCF. Verification and certification of ERs generated annually by Svilosa will be coordinated by the PCF.

which will ultimately purchase the ER. As per the requirement of the Kyoto Protocol, the Bulgarian Government will operate a registry that will manage transfer of ERs generated by the project. There is a possibility that Svilosa will sell the CHP plant to a third party in 2004 and details of the transaction are currently being developed.

7. Sustainability

The sustainability of the project mainly depends on the viability of Svilosa. As long as the plant continues to operate it would generate biomass that would be used as a fuel resulting in ERs.

A market study was conducted that analyzed the plant's strengths and weaknesses. Svilosa is a small producer in the worldwide pulp market and with a production capacity of around 55,000 tons of cellulose per year it would compete with companies that have more than 10 times the production capacity, have a marginal cost advantage, and are located in low cost countries where wood is abundant. However, Svilosa also has certain strengths since it is close to the EU market and has an abundant supply of good quality hardwood, a key raw material. The study concluded that although Svilosa faces intense competition, the company is viable as long as it is able to replace or revamp the recovery boiler. The risks associated with the viability of the plant are described below.

8. Lessons learned from past operations in the country/sector

This is a new type of project in Bulgaria and as a result relevant examples are limited. However, lessons learned in similar projects in the region are reflected in the project design and include:

- **Emphasis on institutional arrangements** In Bulgaria, which went through a decade of transition, the business environment is still maturing and regulatory reforms are still ongoing. In such an environment private companies like Svilosa have to constantly adjust their business to remain competitive. In this context, the institutional arrangements of the project are critical since it would help Svilosa to meet its obligations under the ERPA. The institutional risks of the project have been identified and mitigation actions have been suggested. The Monitoring Plan also puts emphasis on institutional arrangements by making Svilosa responsible and accountable for key aspects of project implementation.
- **Involving the Government** Although the project would be implemented by a private company, it would support Bulgaria's objective of meeting the requirements of the Kyoto Protocol. In this context, it is important that the Government is fully engaged in project preparation and implementation. The Government should also be aware of the worldwide trends related to carbon trading. In fact, the Government has taken on the obligation to be involved in the project through the Host Country Umbrella Agreement. Through the Joint Implementation Unit, located in the Ministry of Environment and Water (MOEW), the Government has been and will be fully informed about developments related to the Kyoto Protocol and the project.

9. Environment Aspects (including any public consultation)

Issues :

Svilosa has received confirmation from the MOEW (Decision #2-PR/2003 dated February 3, 2003) that an EIA report is not required for the Biomass Boiler project. An EMP for the biomass boiler project has been prepared in line with Bank requirements.

The installation of the biomass boiler has positive environmental benefits. Apart from the reduction in greenhouse gases, there will be a reduction in local air pollutants. Further, there will be a reduction in the residual biomass stockpile. In addition, due to less use of coal there will be a reduction of 3,000 tons of ash requiring proper disposal. The characteristics of the ash generated from the biomass boiler will be similar to the ash generated from the CHP. As a result, the ash from the biomass plant would be disposed in the ash disposal site for the CHP plant.

10. List of factual technical documents:

PCF documents, such as the Baseline Study and Monitoring Plan, can be viewed in the Document Library of the PCF's website at: <http://www.prototypecarbonfund.org/splash.html>.

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Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.

Tables, Charts, Graphs:

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