Table of contents

1 Project description, Type, Location and Schedule

Project description, Type, Location and Schedule	
Project objectives	The objective of the project consists in reduction of greenhouse gases by substituting of the natural gas with biomass wastes to produce technological steam.
Description of the project and planned activities	The activity of the project will consists in substitution of the natural gas burned to produce technological steam at production units of „Orhei-Vit" SA, located in the towns of Orhei and Causeni, for biomass wastes resulted from the production units and usually thrown on town's landfills. The actual practice of processing the apple pomace (marc) and of other wastes consists in their throwing out at the town's landfills that results in emission of large quantities of the greenhouse gases, namely methane, as a result of anaerobic digestion. To reduce these emissions, by implementing the project, there will be procured and used biomass steam boilers (apple pomace (marc), pits etc.). *The activities to be carried out at production unit from Orhei town* In July this year at the production unit from Orhei town there will be installed and commissioned the equipment for drying of the apple pomace (marc) and fruit's pits. The drying equipment is a component part in the technological process for production of steam by the biomass steam boilers. The biomass should be preliminary dried to a minimal level of humidity, before it is burned in the boiler. In August of this year there will be built a storage for storing the dried biomass. It is planned to install and commission the boiler that will use biomass in June of the year 2012. *The activities to be carried out at production unit from Causeni town* In May of the year 2012 there will be reconstructed the storage for storing the dried biomass. In June of the year 2012 there will be installed and commissioned the equipment for drying the pomace, fruit's pits and other types of biomass. In June of the year 2012 there will be installed and commissioned the boiler functioning on biomass. Steam production by biomass steam boilers shall start at both production units (from Orhei and from Causeni) in

	July of the year 2012.
Employed technologies	In the Republic of Moldova there are not used the technologies to burn biomass in the form of apple pomace, fruit's pits etc. There are implemented technologies for burning of other types of biomass as wood wastes, shells of sunflower seeds. Due to this reason the implementation of the said project of CDM bears substantial risks for its authors.
Project type	
Type of activities	The reduction of the emission of greenhouse gases
Field of activities	The projects comprises the following activities: Close to the gas boiler traditionally used to produce technological steam, there will be built a biomass steam boiler that will produce the majority of the necessary steam. Gas boiler will be used to cover only the steam demand during the peak hours. In this respect there will be promoted the following activities: 1. Refusal to transport the biomass wastes to the landfills. The biomass wastes will be centrally dried and stored for future burning. 2. There will be provided for the metering systems to measure the actual quantities of biomass burned in boilers to produce technological steam. 3. The approval of the monitoring system, in order to be able to determine the reduced quantity of the emissions of greenhouse gases.
Determined greenhouse gases $CO_2/CH_4/N_2O/HFCs/PFCs/SF_6$	CH_4, CO_2
Location of the project	
Country	The Republic of Moldova
Town	Orhei and Causeni
Short description of the location	The equipment for drying of the biomass at both production units (in the towns of Orhei and Causeni) will be located on the territory of the units within the section for processing of apples into concentrated juice. The boilers functioning on biomass to produce technological steam will be placed within the boiler houses of the production units. At the production unit from the town of Orhei the distance from the boiler house to the processing section is 510 meters and at the production unit from the town of Causeni the same parameter is 800 meters.

The participant to the project nr. 1	
The name of the Participant to the Project	„Orhei-Vit" SA
The role of the Participant to the Project	Operator of the Project, investor
Organizational category	Private enterprise
Contact person	Mr. Gudim Rodion
Address (central office)	Republic of Moldova, Chisinau city, 40 Industriala str.
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Email	rgudim@orhei-vit.com
Website	www.orhei-vit.com
Main activities	Elaborator, operator of the project, investor. Main activities of the project are: ▪ Production of the majority of quantity of technological steam on the bases of burning of biomass wastes.
Summary of the relevant experience of the Participant to the Project	Main activity of „Orhei-Vit" SA is the processing of fruits and vegetables in order to obtain concentrated juices and products. The enterprise has two production units, one in the town of Orhei and the other one in the town of Causeni. The enterprise has experience related to drying of biomass. During the period 1989-1998 the enterprise dried at its installations the apple pomace obtained as a result of apples processing.

The assumed schedule	
The nearest date of the beginning of the project implementation The year when the activity of the project / equipment will be operational	May of the year 2011 (contracting of the production of biomass drying equipment at the production unit from the town of Orhei). June of the year 2012 (installation and commissioning of the biomass steam boilers at both production units).
The evaluation of the time span necessary from the obtaining of the acceptance from PIN up to the moment of the applicability	1 year
Assumed delivery during the first year of CER/ERU/VER	2013
Project duration [years]	20 years
Assumed crediting period of 7 years twice renewed or of 10 stable years	10 years is applied for crediting period.
Current status or the Project phase	Prefeasibility study has been performed.
Current status of acceptance by the Country of location	Completed PIN
The position of the Country of acceptance towards the Kyoto Convention	The Republic of Moldova submitted the act for adherence to the Kyoto Convention on April 22, 2003 that entered into force on February 16, 2005.

2 Methodology and Additionality

Methodology and additionality	
The calculation of the reduction of the greenhouse gases emissions	The presumed reduction of the emissions of the greenhouse gases is based on two phases: • Avoiding of the losses of the methane emissions; • Substitution of the natural gas by biomass. The total amount of presumed emissions reduction during 10 years of crediting is equal to 577.942 tones of CO2eq, including of 563.196 tones of CO2eq, related to exclusion of formation of CH4 at landfills as a result of anaerobic fermentation of biomass.
Basic scenario	Basic scenario presumes: • To continue to throw at the landfills from the towns of Orhei and Causeni of approximately 2 623 tones of apple pomace and 188 tones of fruit's pits that will continue to be digested in anaerobic conditions and form the respective quantity of CH4; • The necessary technological steam will continue to be produced burning exclusively natural gas.
Additionality	The proposed Project is based additionally on performing of the financial and barrier analyses. On the bases of the financial analysis it may be concluded that: • Internal rate of return (IRR) of the project, without selling of the CO2 emission reductions, constitutes for Orhei IRR=3,6 % and for Causeni IRR=6,4%, that is significantly lower than the IRR accepted for the market risks in the Republic of Moldova. Under the conditions when there are sold the reductions of the CO2 emissions, IRR for Orhei equals to 14,2 % and IRR for Causeni equals to 21,1 % and this makes the project attractive for investments. On the bases of barriers analysis the proposed project encounters the following: *Investments barrier* The investments in biomass steam boilers are 2,5 times higher than the investments in boiler functioning on natural gas. Moreover, local banks issue credits with a very high interest rate. External credits are exposed to an increased risk, due to the fact that the Republic of Moldova is catalogued as a country with a very high risk, having Long

	term rating - Caa1, Total Risk Premium = 15,75%. For comparison it is given the following example. The riskiest country in the world is Ecuador with the Long term rating – Caa3, Total Risk Premium = 19,5%. The risks for the Republic of Moldova is determined mainly by the Transnistria separatism, that introduces significant political and economical instability. Having a weak economy, the Republic of Moldova is known as the poorest country of the Europe and this impedes very much to obtain an external credit. In comparison with the technology based on burning of the natural gas, the technology based on biomass needs additional spaces to store the biomass, being also necessary to build the roofs for protection of biomass from the atmospheric precipitation. Due to the fact that the costs of land is enough high in Orhei town and Causeni town, this will lead to additional costs for storing of biomass. The lifetime of boilers functioning on biomass is shorter and this implies a higher number of scheduled maintenance necessary for proper operation of installation. *Technological barrier* The proposed CDM Project is not a one that uses a "business-as-usual" technology. The problems of operation and maintenance of the installation functioning on biomass are new for engineers/operational staff. They have no experience in operation of such installations. The respective staff will have to adapt to the new installations and becoming acquainted with them will require enough time in order to doubt the rationale of their implementation. Besides, the new biomass steam boilers, as well as the spare parts for them will be necessary to be imported and this implies additional managerial efforts for optimization of the operation period. The technology based on biomass contains a significant quantity of ash in comparison with the one based on natural gas. The large content of ash imposes a more difficult operation, with frequent stops for removing of ash, otherwise boilers functioning on biomass may refuse instantly with grave consequences for the technological process. *Prevailed Practices barrier* In spite of the fact that in the Republic of Moldova there are in use boilers functioning on biomass, to use them at „Orhei-Vit" SA meets great difficulties due to the fact that in comparison with other technologies based on biomass, at the

	enterprise will be used a type of biomass that is used nowhere in the country, such as apple pomace and fruit's pits. Being a relatively new Project, its promotion exposes the activity of the enterprise to an enough high risks.
Data regarding the production sector	At present in the Republic of Moldova there are 5 large canning companies owning 7 production units (factories). During a season (July 15 – November 30, 135 days) it is processed on average from 80 thousand tones up to 130 thousand tones of apples at all 5 canning companies. Both production units of „Orhei-Vit" SA cover approximately 25 % of this quantity. During the period of approximately 135 days both production units process from 20 thousand tones up to 33 thousand tones of apples and produce from 3 thousand up to 4,7 thousand tones of apple concentrated juice. Approximately one thousand tones of concentrated juice is used for own production of juices in Tetra-Pack package, the rest of the concentrated product is sold to Austria, Poland, Germany and the Ukraine.
Methodology	The project is covered by the CDM Methodology. I.C. Thermal energy production with or without electricity. Version 19, EB 61

3 Expected environmental and social benefits

Expected environmental and social benefits	
Local advantages For example. Impact on the local air and water pollution, as well as other types of pollution.	• The reduction of hazardous emissions at landfills from the towns of Orhei and Causeni, with subsequent improvement of the quality of soils and air, diminution of unpleasant smells. It will be reduced the pollution also from the use of transportation to carry the wastes to the landfills.
Global benefits Description if other global benefits other than reduction of greenhouse gas may be attributed to the project.	The improvement of the quality of the soil not only by excluding the fermentation of the biomass in landfills but also by enrichment of the soil with ash obtained as a result of biomass burning that is rich in microelements.
Social - economic aspects	
What social and economic aspects can be attributed to the project that will not appear in case this project would not be implemented? Indicate the localities and the number of population that will benefit as a result of the implementation of this project.	• The Project represents the introduction of an advanced technology in the Republic of Moldova and will lead to professional training of the future employees. • The project contributes to the support of the rational usage of energy and climate protection through utilization of continuous energy. • The Project has as a result the reduction of the import of natural gas in the Republic of Moldova that leads to the balancing of the market in the country. • The Project ensures the viability of the production units of the "Orhei-Vit" SA by using a source of continuous energy.
What are the direct possible effects (for example creation of manpower, provision of the necessary capital, external exchange effects)?	The project will lead to the creation of the jobs during the phase of construction as well as during the phase of operation. The effects regarding the hiring can be envisaged: • 6 permanent jobs for operation of the equipment (biomass boilers and drying equipment) during the whole duration of the project. • 20 direct jobs during the phase of

	construction. The project will subsequently lead to improvement of the situation with jobs for companies rendering external services. The reduction of the fuel import will improve the energy balance of the country.
What are the possible effects (for example associated training/education with implementation of the new processes, technologies and products and/or project's impact on other industrial branches?	• Operation of the steam boiler functioning on biomass, such as apple pomace, represents a new start and a new technology for the Republic of Moldova. Due to this fact there will be required the transfer of know – how. • The use of the biomass for technological steam generation will serve as an additional precedence for promotion of this type of fuel in our country with the future necessity to develop the respective training in the educational institutions.
Environmental strategy/priorities of the country of location Summary description of the project compliance and of the priorities of the country of location	The project complies with the national energy strategy to involve in the energy balance the renewable energy sources.