



# Scientific Engineering Centre "BIOMASS"

## Development of Joint Implementation (JI) projects under Kyoto Protocol

- Identification of JI projects
- Feasibility studies
- Development of PINs
- Development of PDDs
- Development of JI project portfolios
- Management of JI projects
- Monitoring of JI projects



Ukraine, 03067,  
Kyiv-67, p/o box 66

Tel/fax: (+38044) 456-94-62  
453-28-56  
332-91-40

E-mail: [info@biomass.kiev.ua](mailto:info@biomass.kiev.ua)

[www.BIOMASS.kiev.ua](http://www.BIOMASS.kiev.ua)

### Rehabilitation of the District Heating System of Crimea

Project Partner: STV, Germany; Institute of Engineering Ecology, Kyiv, Ukraine

**Project Idea:** Reconstruction and modernization of existing DH system:

- Rehabilitation of 188 boiler houses;
- Fuel switch (from fuel oil to natural gas) for a number of boiler houses;
- Replacement of 43 km of heat networks by pre-insulated pipes;
- Installation of 6 CHP units (total installed capacity 3 MWe);
- Landfill gas recovery and utilization for energy purposes.

Expected GHG emission reductions:

120,000 t CO<sub>2</sub>e/yr

Total expected ERUs for 2008-2012:

600,000 t CO<sub>2</sub>e

Total investment: 13.6 million EUR

Payment for ERUs covers over 25% of the total investments at price 7 EUR/t CO<sub>2</sub>e.

**Status:** Positively validated PDD is under evaluation at Austrian JI Program (June 2006).



### District Heating System Rehabilitation of Chernigiv Region

Submitted by OJSC "Oblteplocmunenergo", Chernigiv, Ukraine

Project Partner: Institute of Engineering Ecology, Kyiv, Ukraine

**Project Idea:** Reconstruction and modernization of existing DH system.

Total Investments: 8.4 million EUR

Natural gas saving: over 33 million m<sup>3</sup>/yr

Proposed ERUs for a commitment period:

275,000 t CO<sub>2</sub>e

Payment for ERUs covers over 25 % of total

investments under 7 EUR/t CO<sub>2</sub>e.

**Status:** Positively validated PDD is under evaluation of the Netherlands JI Program EruPt (June 2006).



### Heat and Power Production on Stripped Casing-head Gas at Boryslav

Proposed by the Scientific-productive company "Eastern European Energetic Union" Ltd., head office is in Kyiv; project implementation site is in Boryslav.

**Project Idea:** utilization of non-conditional gas by construction of a power plant with total capacity of 12 MWe.

Expected GHG emission reductions:

60,000 t CO<sub>2</sub>e/yr

Total expected ERUs for (2008-2012):

300,000 t CO<sub>2</sub>e

Total investment: 9,0 million EUR

Payment for ERUs covers over 20% of total investments at price 7 EUR/t CO<sub>2</sub>e.

**Status:** Positively validated PDD is under evaluation at Austrian JI Program (June 2006).

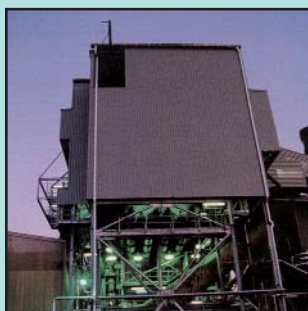


### SELECTED

Title	
Development of 10 JI projects portfolio for German JI program	
Feasibility study and development of PDD for Holodna Balka coal mine gas project, for Japanese JI program	
Feasibility study of "Poltava landfill gas utilization project", for Japanese JI program	
Feasibility study of "Methane gas utilization project at Bortnichi waste water treatment plant in Kiev", for Japanese JI program	
PIN for JI Project "Landfill gas capture and utilization at Dnipropetrovsk MSW landfill, Ukraine", for Austrian JI program	
PIN for JI Project "Landfill methane capture and utilization at Kremenchuk landfill, Ukraine", for Austrian JI program	
PIN for JI Project "Improvement of degassing system and utilization of coal mine methane for heat and power production at Tchaikino mine, Ukraine", for Japanese JI program	
PIN for JI Project "Improvement of wastewater treatment system and biogas utilization for heat and power production at Kharkov WWTP, Ukraine", for Japanese JI program	
PIN for JI Project "Improvement of wastewater treatment system and biogas utilization for heat and power production at Lugansk WWTP, Ukraine", for Japanese JI program	
PIN for JI Project "Implementation of heat (steam) production with using of biomass waste burning steam boiler at "Uniplit", Ivano-Frankivsk region, Ukraine", for Japanese JI program	
PIN for JI Project "Landfill gas collection and utilization for heat (power) production in Belaya Therkov landfill, Ukraine", for Japanese JI program	
International Conference on JI Projects in Ukraine "Climate Change and Business", October 3-5, 2005, Kyiv, Ukraine	
Feasibility study for "Slavutich wood fired DH project", for Japanese JI program	
PIN for JI project "Coal mine methane capture and utilization at Bazhanov mine, Donetsk region"	
PIN for JI project "Coal mine methane capture and utilization at Krasnolimanskaya mine, Donetsk region"	
PIN for JI project "Coal mine methane capture and utilization at Kirov mine, Donetsk region"	
PDD JI project "District heating system rehabilitation of Chernigiv region", for EruPt-4 tender	
PIN for the JI project "Rehabilitation of the district heating system of Crimea", for Austrian JI Programme	
PIN for the JI project "Utilization of sunflower seed husks for steam and power production at the oil-extraction plant OJSC "Kirovogradoliya", for Austrian JI Programme	
PIN for the JI project "Electric power production on stripped casing-head gas in Boryslav", for Austrian JI Programme	
PIN for the JI project "Methane capture at the Odessa municipal solid waste landfill", for EruPt-5	
Feasibility study for Surgut landfill gas project, Russia, for Japanese JI program	
Feasibility study for Lugansk landfill gas project, Ukraine, for Japanese JI program	

**JI PROJECTS**

Supporting Agency/Client	Date
German Energy Agency, DENA	2005-2006
Shimizu Corporation, Chugoku Electric Power Co., Japan	2005-2006
Shimizu Corporation, Japan	2005-2006
Shimizu Corporation, Japan	2005-2006
Austrian Energy Agency EVA	2006
Austrian Energy Agency EVA	2006
Shimizu Corporation, Japan	2005-2006
Shimizu Corporation, Japan	2005
Shimizu Corporation, Japan	2005
Shimizu Corporation, Japan	2005
Shimizu Corporation, Japan	2005-2006
Conference fees and sponsors support	2005
Sumitomo Corporation, Japan	2005
National Joint Stock Company "Coal of Ukraine"	2005
National Joint Stock Company "Coal of Ukraine"	2005
National Joint Stock Company "Coal of Ukraine"	2005
Institute of Engineering Ecology, Ukraine; STV, Germany	2004
Institute of Engineering Ecology, Ukraine; SVT, Germany	2004
Holding "Grain Trading Company", Ukraine	2004
Scientific-productive company "Eastern European Energetic Union" Ltd., Ukraine	2004
"RAF Plus" Ltd., Ukraine	2004
Shikoku Electric Power Co., Inc. (YONDEN), Japan	2004
Shimizu Corporation, Japan	2004



**Utilization of sunflower husks for steam and power production at the oil extraction plant OJSC "Kirovogradoliya"**

Proposed by oil extraction plant OJSC "Kirovogradoliya", Kirovograd.  
Project Idea: Installation of a new husk fired CHP plant:

- 2 operational husk fired boilers (16 t steam/h each);
- Steam turbine (2.5 MW);
- Reserve husk fired boiler (16 t steam/h).

Expected GHG Emission Reductions due to:

1. Replacement of natural gas by biomass: 22,000 t CO<sub>2</sub>e/yr
2. Avoiding brining biomass to the landfill: 13,000 t CO<sub>2</sub>e/yr
3. Avoiding of electricity purchase: 15,000 t CO<sub>2</sub>e/yr

Total ERUs for the commitment period 2008-2012: 250,000 t CO<sub>2</sub>e

Total investment: 6,1 million EUR  
 Payment for ERUs covers up 25 % of total project cost under 7 EUR/t CO<sub>2</sub>e.

Status: Positively validated PDD is under evaluation at Austrian JI Program (June 2006).

**Methane gas utilization project at Bortnichi waste water treatment plant in Kiev**

Submitted by JSC "Kyivvodokanal", Kyiv, Ukraine,  
Project Idea: Installation of the four digesters at Bortnichi Waste Water Treatment Plant in Kiev, methane generation for power and thermal energy production:

- four digesters, 9000 m<sup>3</sup> each;
- three CHP units (3000 kW<sub>e</sub>+ 3400 kW<sub>th</sub>) each.

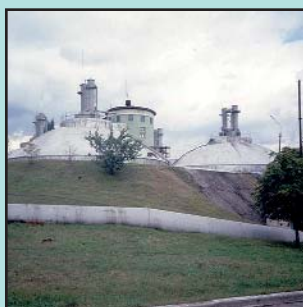
Expected GHG Emission Reduction due to:

1. Natural gas replacement at CHP plant: 40,000 t CO<sub>2</sub>e/yr
2. Methane avoiding at the sludge fields: 115,000 t CO<sub>2</sub>e/yr

Total expected ERUs for 2008-2012: 770,000 t CO<sub>2</sub>e

Total investment: 28.4 million EUR  
 Payment for ERUs covers over 20 % of total investments under 7 EUR/t CO<sub>2</sub>e.

Status: developed PIN is under consideration at Japanese JI program (June 2006).



**Holodna Balka coal mine gas project**

Supported by the Ministry of Coal Industry of Ukraine  
Project Idea: Methane destruction through utilization of coal mine methane at a mini-CHP unit with installed capacity 1 MW el.

Expected GHG emission reductions: 44,000 tCO<sub>2</sub>e/yr  
 Total ERUs for the commitment period 2008-2012: 220,000 tCO<sub>2</sub>e  
 Total investment: 1.6 million EUR  
 Payment for EURs covers 95% at 7 EUR/tCO<sub>2</sub>e

Status: PDD is under development for Japanese JI program (June 2006).





### Methane Capture at the Odessa Municipal Solid Waste Landfill

Submitted by the "RAF-PLUS" Ltd., Odessa, Ukraine.

Project Idea: Installation of landfill gas extraction system at Odessa MSW landfill that will capture methane and replace natural gas in cement factory kilns (500 m from the landfill).

Expected GHG Emission Reduction due to:

1. Natural gas replacement at Cement factory:	7,000 t CO <sub>2</sub> e/yr
2. Capture of methane emissions at the landfill:	60,000 t CO <sub>2</sub> e/yr
Total expected ERUs for 2008-2012:	320,000 t CO <sub>2</sub> e
Total investment:	1.1 million EUR
Payment for ERUs covers over 170% of total investments at price 7 EUR/t CO <sub>2</sub> e.	

Status: PDD has been developed and positively validated (June 2006).



### Construction of flexing generating CHP plant at Chervonograd City

Submitted by Energoinvest Ltd., Lviv, Ukraine

Project Idea: Construction of flexing CHP plant for covering grid peak loads with installed capacity 26 MWe.

Expected GHG emission reductions:	56,400 t CO <sub>2</sub> e/yr
Total ERU for the commitment period 2008-2012:	282,000 t CO <sub>2</sub> e
Total investment:	16,6 million EUR
Payment for ERUs covers over 17% of total investments at price 10 EUR/t CO <sub>2</sub> e.	

Status: Selected for PDD development by DENA and KfW (June 2006).



### International Conferences on JI Projects in Ukraine "Climate Change and Business", Kyiv, Ukraine

Organizers:

Ministry for Environmental Protection of Ukraine  
 Institute of Engineering Thermophysics of NAS of Ukraine  
 Institute of Engineering Ecology  
 Scientific Engineering Centre "Biomass"  
 Point Carbon

Topics:

1. Investors' outlook into JI market
2. Emissions Trading Policy & JI procedures in Ukraine
3. JI projects in landfill and waste water biogas
4. JI projects in coal mining and industrial sectors
5. JI projects on heat and power production
6. Development, determination and verification of JI projects

Participants:

The First conference on JI projects held on October 3-5, 2005 stirred a great interest in Ukraine and abroad: 300 participants, including 100 foreign participants.

This type of conference will be held every year. The Second International Conference on JI Projects in Ukraine "Climate Change and Business" will take place on October 23-25, 2006 in Kyiv, Ukraine.