CAEPCO

Центрально-Азиатская
Электроэнергетическая Корпорация

Corporate report

on Environmental and Social Action Plan

of «Central-Asian Electric

Power Corporation», JSC

for the year 2009

Almaty, 2010

CONTENTS

This report of "Central Asian Electric Power Corporation", JSC (hereinafter abbreviated as CAEPCO, JSC) is prepared according to the requirements of Environmental and Social Action Plan (hereinafter abbreviated as ESAP) and prepared as part of the investment program in accordance with the Policy of the European Bank for Reconstruction and Development (EBRD) in respect to the environmental protection of the EBRD-financed projects.

CAEPCO, JSC (hereinafter Company) is a vertically-integrated energy holdings represented by the energy enterprises in Pavlodar and North Kazakhstan regions including all the elements of electricity supply – generation, transmission and distribution and by distribution company in Astana.

The Company contains of:

1. Group of companies of "PAVLODARENERGO", JSC (hereinafter "PE", JSC) - "Pavlodar Heat Distribution Company", JSC (hereinafter "PHDC" PE), "Pavlodar Regional Electric Distribution Company", JSC (hereinafter "PREDC"), "Energocentre", JSC ("EC", JSC)

2. Group of companies of "SEVKAZENERGO", JSC (hereinafter "SKE", JSC) – "North Kazakhstan Regional Electric Distribution Company", JSC (hereinafter "NKREDC", JSC), "Petropavl Heat Distribution Company", LLP, "North Kazakhstan Energocentre", JSC (hereinafter "NK EC", JSC).

1. Environmental policy and concepts of environmental activities of the company

Interests of the environmental protection are one of the most important among the priorities of the Programme of strategic development of the Company. Prevention of pollution of the environment is decisive in all decision-making for the production of electricity and thermal energy. Environmental pollution is easier to be prevented rather than eliminated. During the introduction of new technologies, the level of their impact on the environment and the efficiency usage of energy and natural resources is assessed.

Environmental policy of the Company was developed in accordance with Concept of ecological safety of the Republic of Kazakhstan for 2004-2015 years, Environmental Code and ISO 14000 standards based on the tasks set by Environmental and Social Actions Plan. The acquaintance with the environmental policy on the subsidiaries of the Company was implemented with the help of acquaintance lists. The Policy is displayed on the information boards of Environment Management System in all the departments. It was published in "Energetic" newspaper # 13 (2348) dated 17 July 2009.

The Company intends to do everything possible to prevent negative environmental impacts and adopt practices that meet the requirements of ISO 14001.

The fundamental principles of environmental policy are the following:

- recognition of the constitutional human right on healthy environment;
- consideration of priority of environmental security as an integral part of national security;
- guidance by considerations of feasibility and environmental principles of the environmental management system during the development of economic strategy;
- energy saving and rational use of natural resources and energy at all stages of production of electricity and heat;
- the reduction of emissions and wastes from the production of electricity and heat, and environmentally safe treatment for them;
- carrying out activities aimed on reduction and prevention of accidents and reduction of their negative impact on the environment;
- improvement of technological processes of generation of electricity and heat energy.
- openness and accessibility of environmental information, immediate notification of all interested parties about the accident, their environmental impacts and measures for their elimination;
- openness and accessibility of results of environmental monitoring;
- involvement of all personnel of the enterprises in environmental activities of the enterprises through the development and improvement of environmental education of employees; demand all employees to follow safety regulations, environmental standards and rules necessary to comply with environmental policies and achievement the effectiveness of environmental performance.

Top management of CAEPCO, JSC undertakes the liability for implementation of the stated environmental policy and maintenance of environmental management system.

Environmental activities of the Company are being performed in the following directions:

1. Organization and implementation of production monitoring in order to achieve target indicators of environmental quality:

- Ambient air monitoring, including:
  - monitoring of operating efficiency of gas-and-dust purifying equipment and compliance with established emissions standards;
  - monitoring of ambient air pollution level on the border with the company's sanitary zone and ash ponds;
  - monitoring of hazardous substances concentration in the company's emissions;
  - monitoring of the quality of instrumental measurements;
- Water Resources monitoring, including:
  - monitoring of pollution level of underground water at the industrial sites of the

company and on the border with the ash pond sanitary zone.

- Soil, land resources and production wastes monitoring, including:
  - monitoring of soil contamination level in the area of the company industrial sites and ash ponds;
- Monitoring of production, management and location of production and consumption wastes;
- Development and planning of environmental activities;
- Monitoring of implementation of the nature-conservative measures;
- Estimation of impact level on the environmental components.
- Minimizing the impact of production processes of the enterprises on the components of environment and human health;
- Formation of a higher level of environmental awareness and responsibility of managers and employees of the Company;
- Increasing production and environmental efficiency of the system of environmental protection management.

2. Registration of environmental emissions, industrial monitoring data analysis, compliance with environmental requirements, provision of industrial ecological monitoring data.

3. Organization of internal inspections. Implementation of preventive and corrective actions aimed at the elimination of violations of environmental legislation of the Republic of Kazakhstan.

4. Implementation of analysis of the company's environmental protection activity and ecological efficiency of environmental protection management system in the company.

2. Environmental regulations of activities of the Company for 2009

In the context of economic activity the Company complies with the requirements of current legislation in the field of environmental protection, regulated environmental By Ecological Code and other regulatory legal acts of the Republic of Kazakhstan.

Subsidiaries of the Company:

"PAVLODARENERGO", JSC

- Insurance policy №00001851 dated 10.03.2010. Term of insurance policy till 11.03.2011.
- Draft regulations for maximum permissible emissions for CHP-2 of "PAVLODARENERGO", JSC approved by Irtysh Ecology Department in 2008. Conclusion of state ecological expertise of the draft standards for maximum permissible emissions for CHP-2 of "PAVLODARENERGO", JSC № 7-12-2/515 dated 28.08.2008.
- Draft regulations for maximum permissible emissions for CHP-3 of "PAVLODARENERGO", JSC approved by Irtysh Ecology Department in 2008. Conclusion of state ecological expertise of the draft standards for maximum permissible emissions for CHP-2 of "PAVLODARENERGO", JSC № 7-12-2/1598 dated 30.06.2008.
- Draft regulations for maximum permissible emissions for ECHP of "PAVLODARENERGO", JSC approved by Irtysh Ecology Department in 2008. Conclusion of state ecological expertise of the draft standards for maximum permissible emissions for Ekibastuz CHP of "PAVLODARENERGO", JSC № 7-12-2/1514 dated 23.06.2008.
- Environmental impact assessment of enterprise «Ekibastuz Heating Plant» of "PAVLODARENERGO", JSC for 2007. Conclusion of state ecological expertise - № 7-12-1/999 dated 18.04.2008.
- Environmental impact assessment of enterprise CHP-2, CHP-3 of "PAVLODARENERGO", JSC for 2007. Conclusion of state ecological expertise for EIA of CHP-2, CHP-3 of "PAVLODARENERGO", JSC № 7-12-1/1718 dated 17.08.2007.
- Draft standards for wastes disposal approved by PRTDES (Pavlodar regional territory department on environment safety) on 23.11.2006. Conclusion of state ecological expertise of Project "Standards for wastes disposal of «PAVLODARENERGO", JSC № 7-12-4/2676 dated 23.11.2006.
- Amendment of draft standards for wastes disposal for CHP-2, CHP-3 "PAVLODARENERGO", JSC for 2009. (By results of ELEP (Evaluation Level of environmental pollution).
- Conclusion of state ecological expertise for project materials "Amendment of draft standards for wastes disposal for CHP-2, CHP-3 of "PAVLODARENERGO", JSC for 2009. (By results of ELEP).№ 03-1-1-10/11147 dated 04.11.2008.
- Conclusion of state ecological expertise for Working Draft Project "Reconstruction of ash collectors of boiler BBF(Barnaul Boiler Factory)-75-39F including installation of emulsifiers of the second generation of battery type" for ECHP №3-2-12/4012 dated 30.11.2009.
- Conclusion of state ecological expertise for Environmental Impact Assessment to Working Draft Project "Ash collectors of boiler BBF-160 (190) -100 station №5 of CHP-2 of "PAVLODARENERGO", JSC with emulsifiers of the second generation of battery type" №06-03-01-18/7947 dated 10.09.2009.
- Conclusion of state ecological expertise for Environmental Impact Assessment to Working Draft Project "Reconstruction of ash collectors of boiler BBF-160 (190) -100 station №5 of CHP-2 of "PAVLODARENERGO", JSC with emulsifiers of the second generation of battery type" №06-03-01-18/7948 dated 10.09.2009г.
- Conclusion of state ecological expertise for Environmental Impact Assessment to section "Environmental Protection" to Working Draft Project "Installation of turbine of station №1 of P-12-3,4/0,5 M type (first start-up complex). Restoration of electric power capacity of Ekibastuz Heat Plant of "PAVLODARENERGO", JSC №06-03-01-18/73EO0 dated 02.09.2009.
- Permit for emissions into the environment for 2009-2011, № 0055487 dated 22.12.2008 giving a right for emissions to CHP-2, CHP-3 : in 2009 – 65 255, 0848 tons, in 2010 – 65 255, 0848 tons, in 2011 - 65 255, 0848 tons,

  for wastes disposal: in 2009 – 1 338 971,0 tons, in 2010 - 1 338 971,0 tons, in 2011 - 1 338 971,0 tons.
- Permit for emissions into the environment for 2009-2011, № 0055490 dated 22.12.2008, giving a

right to for emissions: in 2009 – 11 614,621759 tons, in 2010 – 12 439,18075 tons, in 2011 – 12 439,18075 tons,
for wastes disposal:in 2009 – 205 033,0 tons, in 2010 – 206 040,0 tons, in 2011 – 206 040,0 tons.

"Pavlodar Heat Distribution Company", JSC

- Environmental impact assessment of "Pavlodar Heat Distribution Company", JSC approved in 2006 by PRTDES. Conclusion of state ecological expertise for Environmental Impact Assessment project for "Pavlodar Heat Distribution Company", JSC №7-12-1/2772 dated 30.11.2006.
- Amendment of "Environmental impact assessment" of "Pavlodar Heat Distribution Company", JSC approved in 2007. Conclusion of state ecological expertise to Project "Amendment of EIA for "Pavlodar Heat Distribution Company", JSC №7-12-1/985 dated 23.05.2007".
- Draft standards for wastes disposal for "Pavlodar Heat Distribution Company", JSC approved in 2007. Conclusion of state ecological expertise №7-12-4/1327 dated 03.07.2007.
- Environmental impact assessment of Ekibastuz Heat Distribution Company of "Pavlodar Heat Distribution Company", JSC for 2008. Conclusion of state ecological expertise for Project for Environmental Impact Assessment – №7-12-1/2225 dated 10.10.2008.
- Draft standards for wastes disposal of Ekibastuz Heat Distribution Company of "Pavlodar Heat Distribution Company", JSC approved by Irtysh Ecology Department in 2008. Conclusion of state ecological expertise for Draft Standards for Waste Disposal for Ekibastuz Heat Distribution Company of "Pavlodar Heat Distribution Company", JSC №7-12-4/961 dated 16.04.2008г.
- Permit for emissions into the environment for 2009-2011 № 0055487 dated 22.12.2008 giving a right to CHP-2, CHP-3 for emissions:
- Permit for emissions into the environment №0033019 issued by Irtysh Ecology Department for 2008 – 2010, giving a right to Ekibastuz Heat Distribution Company of "Pavlodar Heat Distribution Company", JSC for emissions: in 2008 – 0,9984 tons, in 2009 – 0,9984 tons, in 2010г– 0,9984 tons.
- Permit for emissions into the environment №0033689 issued be Irtysh Ecology Department for 2008 – 2011, giving a right to Ekibastuz Heat Distribution Company of "Pavlodar Heat Distribution Company", JSC for emissions: in 2008 – 0,854 tons, in 2009 – 0,854 tons, in 2010 – 0,854 tons, in 2011 – 0,854 tons.

"Pavlodar Regional Electric Distribution Company", JSC (PREDC)

- Environmental impact assessment of the structural unit of "Pavlodarenergoservis", JSC – City Organization for Electricity Networks 2008. Conclusion of state ecological expertise on meeting the environmental standards and requirements № 7-12-1/1039 dated 23.04.2008. Due to renaming in March 2009 for "PREDC", JSC it was received the conclusion of state ecological expertise № 3-2-12/2030 dated 17.07.2009.
- Environmental impact assessment of the structural unit "Pavlodarenergoservis", JSC West Organization for Electricity Networks, 2008. Conclusion of the state ecological expertise on eco-enterprise environmental standards and requirements № 7-12-1/1038 dated 23.04.2008. Due to renaming in March 2009 for "PREDC", JSC it was received the conclusion of state ecological expertise № 3-2-12/2030 dated 17.07.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC City Organization for Intrahouse Electricity Networks 2009. Conclusion of state ecological expertise №12/1-12/Jur-451 dated 12.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – IEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-452 dated 12.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC- MEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-453 dated 12.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – BEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-454 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – UEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-455 dated 08.10.2009
- Environmental impact assessment of the structural unit "PREDC", JSC- JEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-456 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – LEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-457 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – SHEDN 2009. Conclusion

of state ecological expertise №12/1-12/Jur-458 dated 12.10.2009.

- Environmental impact assessment of the structural unit "PREDC", JSC – KEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-459 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – ZEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-460 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – AEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-448 dated 08.10.2009.
- Environmental impact assessment of the structural unit "PREDC", JSC – AEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-449 dated 08.10.2009г
- Environmental impact assessment of the structural unit "PREDC", JSC – PEDN 2009. Conclusion of state ecological expertise №12/1-12/Jur-450 dated 08.10.2009
- Permit for emissions into the environment for 2010-2012 № 0000381 dated 01.04.2010 giving the right to "PREDC", JSC – West Organization for Electricity Networks for emissions: in 2010 – 0,0628476 tons, in 2011 - 0,0837968 tons, in 2012 - 0,0837968 tons,
- Permit for emissions into the environment for 2010-2012 № 0000382 dated 01.04.2010, giving the right for emissions to "PREDC", JSC – City Organization for Electricity Networks :in 2010 – 0,450682 tons, in 2011 - 0,6009093 tons, in 2012 - 0,6009093 tons,
- Permit for emissions into the environment for 2010-2013 № 0000383 dated 01.04.2010 giving the right for emissions to "PREDC", JSC – Electricity Distribution Networks produce emissions:in 2010 – 1,800176 tons, in 2011 –2,711001 tons, in 2012 –2,711001 tons, in 2012 –2,711001 tons.

"SEVKAZENERGO", JSC

- Environmental impact assessment for "SEVKAZENERGO Petropavlovsk" LLP for 2009-2013. Conclusion of state ecological expertise for draft Environmental Impact Assessment for "SEVKAZENERGO Petropavlovsk" LLP № 06-03-01-18/7078 dated 27.08.2009.
- Draft standards of maximum permissible emissions (MPE) for "SEVKAZENERGO Petropavlovsk" LLP for 2010-2012. Conclusion of state ecological expertise for draft MPE for "SEVKAZENERGO Petropavlovsk" LLP № 06-03-01-18/7079 dated 27.08.2009.
- Draft standards of wastes disposal for "SEVKAZENERGO Petropavlovsk" LLP for 2008-2012. Conclusion of state ecological expertise for draft standards of wastes disposal for "SEVKAZENERGO Petropavlovsk" LLP» № 04-13/2601 dated 17.06.2008.
- Permit for emissions into environment for the year 2009 for "SEVKAZENERGO Petropavlovsk" LLP № 0055489 dated 22.12.2008,

  Emission of contaminants – 51 545,028 ton,
  Wastes – 4 867,712 ton,
  Wastes of production and consumption– 992 034,89 ton,
- Permit for emissions into environment for the year 2009 for "SEVKAZENERGO" JSC № 0054937 dated 14.09.2009.

  Emission of contaminants – 15 392,8988 ton,
  Wastes – 1 612,669 ton,
  Production and consumption wastes – 296 251,515 ton.

"Petropavl Heat Distribution Company", LLP

- Environmental impact assessment was approved in 2007. Conclusion of state ecological expertise for draft EIA for "Petropavl Heat Distribution Company" LLP №03-09/1076 dated 07.04.2008.
- Draft standards of maximum permissible emissions(MPE) was approved in 2005. Conclusion of state ecological expertise №03-04/1165 dated 09.08.2005.
- Permit for emissions into environment for the period of на 2008-2010 № 00036917 dated 15.01.2008 giving a right for emissions of contaminants in the following volumes :
- in 2008 – 9,460599 ton, in 2009 – 9,460599 ton, in 2010 – 9,460599 ton
- for storage of production and consumption wastes in the following volumes:
- in 2008 – 227,9 ton, in 2009 – 227,9 ton, in 2010 – 227,9 ton
- Environmental protection actions plan for the period of 2008-2010.
- Program for industrial environmental monitoring.
- Program of monitoring of contaminants of the enterprise developed in 2006.
- Passport of wastes developed in 2009.

"North-Kazakhstan Regional Electric Distribution Company" , JSC

- Environmental impact assessment for "North-Kazakhstan Regional Electric Distribution Company", LLP for 2008-2012. Conclusion of state ecological expertise for draft Environmental Impact Assessment for "North-Kazakhstan Regional Electric Distribution Company" LLP № 104-13/7165 dated 31.12.2008.
- Program for production and ecological monitoring of industrial sites for "North-Kazakhstan Regional Electric Distribution Company", LLP № 15-001 dated 03.12.2007.
- Draft standards of maximum permissible emissions (MPE) for "North-Kazakhstan Regional Electric Distribution Company", LLP for the period of 2008-2012. Conclusion of state ecological expertise for draft MPE for "North-Kazakhstan Regional Electric Distribution Company", LLP № 03-04/639 dated 09.04.2008.
- Wastes passport for "North-Kazakhstan Regional Electric Distribution Company", LLP (hazardous)
- Wastes passport for "North-Kazakhstan Regional Electric Distribution Company", LLP (non-hazardous).

  Permit for emissions into environment for 2009 for "North-Kazakhstan Regional Electric Distribution Company", JSC № 0036915 Series T- 13 dated on 15.01.2008. Emission of contaminants – 11,254290707 ton, production and consumption wastes – 51,307 ton.

3. Key environmental indicators of the company for 2009

Environmental protection is the part of the content of daily work of the company's enterprises. Company Enterprises are working on metering the emissions into the atmosphere and waste generated during the production.

3.1. Hazardous emissions into the atmosphere

Report Data on emissions of the Company for 2009 in group of companies "PAVLODARENERGO", JSC and "SEVKAZENERGO", JSC (tons)

Emissions of pollutants to air	"PE", JSC		"SKE", JSC		**"CAEPCO", JSC, total**	
	Limit	Actual	Limit	Actual	Limit	Actual
Total, including	76 853	65 298	51 545	45 087	128 398	110 385
Coal ash (nonorganic dust 70-20% silica)	30 278	28 735	22 685	19 336	52 964	48 071
Nitrogen dioxide	8 795	7 404	4 735	4 250	13 530	11 654
Nitric Oxide	1 427	1 195	769	691	2 196	1 886
Sulfur dioxide	34 414	26 411	18 446	16 390	52 860	42 801
Carbon monoxide	1 842	1 455	4 594	4 106	6 436	5 561
Other	97	97	315	315	412	412

Report Data of «PAVLODARENERGO", JSC CHP for 2009 (tons)

Emissions of pollutants to air	CHP-2		CHP-3		ECHP		PE, total	
	Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
Total, including	14 723	13 071	50 515	42 086	11 615	10 141	76 853	65 298
Coal ash	6 332	6 262	20 308	19 102	3 638	3 371	30 278	28 735
Nitrogen dioxide	1 109	1 103	6 407	5 106	1 278	1 196	8 795	7 404
Nitric Oxide	180	179	1 039	828	208	188	1 427	1 195
Sulfur dioxide	6 695	5 189	21 303	15 909	6 416	5 313	34 414	26 411
Carbon monoxide	390	322	1 417	1 101	34	33	1 842	1 455
Other	17	17	40	40	41	41	97	97

Note: Permitted emissions to air by Ministry of Environmental Protection in table indicated as Limit of emissions and actual volume of emissions indicated as Actual.

Report Data of Heat Distribution Companies of CAEPCO for 2009 (tons)

Emissions of pollutants to air	Pavlodar Heat Distribution Company		Petropavl Heat Distribution Company		Heat Distribution Companies, CAEPCO, total	
	Limit	Actual	Limit	Actual	Limit	Actual
Total, including	1,85	1,85	9,46	2,46	11,31	4,32
Fluorochemical	0,02	0,02	0,01	0,00	0,02	0,02

Nitrogen dioxide	0,22	0,22	0,21	0,02	0,43	0,24
Iron II oxide	0,80	0,80	0,33	0,18	1,13	0,98
Manganese and its compounds	0,06	0,06	0,02	0,12	0,08	0,18
Carbon monoxide	0,55	0,55	3,45	0,02	4,00	0,57
Other	0,21	0,21	5,44	2,13	5,65	2,34

Report Data of Pavlodar Heat Distribution Company for 2009 (tons)

Emissions of pollutants to air	Pavlodar Heat Distribution Company		Ekibastuz Heat Distribution Company		Total, Pavlodar	
	Limit	Actual	Limit	Actual	Limit	Actual
Total, including	1,00	1,00	0,85	0,85	1,85	1,85
Fluorochemical	0,01	0,01	0,01	0,01	0,02	0,02
Nitrogen dioxide	0,10	0,10	0,12	0,12	0,22	0,22
Iron II oxide	0,55	0,55	0,25	0,25	0,80	0,80
Manganese and its compounds	0,04	0,04	0,01	0,01	0,06	0,06
Carbon monoxide	0,16	0,16	0,39	0,39	0,55	0,55
Other	0,14	0,14	0,07	0,07	0,21	0,21

Report Data of Electricity Networks of CAEPCO, JSC for 2009 (tons)

Emissions of pollutants to air	JSC “PRECDC”		JSC “North Kazakhstan REDC”		Electricity Networks, total	
	Limit	Actual	Limit	Actual	Limit	Actual
Total	6,20	6,20	11,34	11,31	17,54	17,51
Mineral Oil	0,37	0,37			0,37	0,37
Nitrogen dioxide	0,36	0,36	0,10	0,10	0,46	0,46
Nonorganic dust 70-20% silica	0,35	0,35	5,24	5,24	5,59	5,59
Sulfur dioxide	0,10	0,10	0,16	0,16	0,27	0,27
Carbon monoxide	3,61	3,61	0,82	0,82	4,43	4,43
Other	1,40	1,40	5,03	5,00	6,43	6,40

The Company Enterprises didn’t exceed the maximum permissible emissions in 2009.

3.2. Carbon dioxide (CO2) emissions

After entering into force of Kyoto Protocol in the Republic of Kazakhstan on September, 17, 2009, The Company organized a work on preparation of inventory audit of greenhouse gas emissions and consumption of ozone-depleting substances.

“PAVLODARENERGO”, JSC

In October – November, the company carried on correspondence with organizations which have license and experience in the implementation of these works and reviewed provided quotations. In December 2009 according to Order № 2028 date of the tender was scheduled and tender commission was created. The announcement of the tender was published on Dec 26, 2009 in the newspaper “Zvezda Priirtyshya“ № 147 (17946).

In 2009 “PAVLODARENERGO”, JSC produced 3 022 mln kWh of electric energy and 4 093 mln GCal of heat energy. 3 214,388 thousand ton of Ekibastuz coal and 3,247 thousand tons of mazut was used for production of the energy. While burning of coal in boilers 4 818 thousand ton of CO2 were discharged

into the atmosphere through the stacks. Method of assessment of greenhouse gas emissions was approved Order of Ministry of Environmental Protection of RK № 251-e 62-p dated November, 24, 2009.

"SEVKAZENERGO", JSC
In 2009 "SEVKAZENERGO", JSC produced 377 mln kW/hour of electric power and 1,910 mln GCal of heat power. 2 193,147 thousand ton of Ekibastuz coal and 2,287 thousand tons of mazut were used for production of the enerfy. While burning of coal in boilers 3 285 thousand ton of CO2 were discharged into atmosphere through the stacks. Method of assessment of greenhouse gas emissions was approved Order of Ministry of Environmental Protection of RK № 251-e 62-p dated November, 24, 2009.

Overall the Company produced 5 399 mln kWh of electric energy and 6,003 mln GCal of heat energy in 2009. 5 407,535 thousand tons of Ekibastuz coal and 6,534 thousand tons of mazut were used for production of the energy. While burning of coal in boilers 8 103 thousand ton of CO2 were discharged into atmosphere through the stacks.

3.3. Placement of ash slag emissions

Value of ash slags permitted and actual for group of the companies group of companies "PAVLODARENERGO", JSC and "SEVKAZENERGO", JSC for 2009 (tons)

	"PAVLODARENERGO"		"SEVKAZENERGO"		CAEPCO, total	
Wastes	Limit	Actual	Limit	Actual	Limit	Actual
Ash slags	1 544 004	1 289 876	992 035	894 295	2 536 039	2 184 171

Including PAVLODARENERGO, JSC

	CHP-2		CHP-3		Ekib. CHP		PE, total	
Wastes	Limit	Actual	Limit	Actual	Limit	Actual	Limit	Actual
Ash slags	291822	267141	1047149	817 703	205 033	205 032	1 544 004	1 289 876

The Company Enterprises didn't exceed the maximum permissible ash slags emissions in 2009.

4. Implementation of environmental requirements

To meet the requirements of the Technical Regulations and minimize the impact of production processes of the enterprise on the environment and human health, subsidiaries of "PAVLODARENERGO", JSC and "SEVKAZENERGO", JSC developed a environmental protection activities for the maximum possible reduction of emissions into the environment. Copies of the Program are attached to the report.
The company developed and implements an improved system of flue gas purification – replacement of the existing ash catchers, i.e. wet scrubbers with superposed venture pipes with ash collecting efficiency equal 97%, with battery emulsifiers of the second generation for each boiler, with the efficiency 99,5%.
Modernization of the ash catchers will allow decrease in coal ash output concentration to 250-300 mg/m3 and put down sulfur oxides without any additives by 5-15%.

To minimize the impact of production processes of the enterprise on the environment and human health, environmental protection activities were developed and approved by Environmental Protection agency.

"PAVLODARENERGO", JSC developed an environmental protection actions and approved them by the Ministry of Environmental Protection for the period of 2009-2011 for the amount of 1 444 751 thousands KZT. In 2009 the 18 actions of 27 planned actions were performed for the total amount of 464 383 thousands KZT.
The main ones are the following:

- Reconstruction of ash collector of boiler №5 BBF-160-100F(M) on CHP-2 with installation of emulsifiers of the second generation (battery type), costs made 77 897 thousands KZT;
- Reconstruction ash collector of boiler №5 BBF-420-140 on CHP-3 with installation of emulsifiers of the second generation (battery type), costs made - 110 033 thousands KZT;
- Construction project of new ash lagoon on CHP-3 for 9 758 thousands KZT was developed;
- Strengthening of dam of the ash lagoon of CHP-2, CHP-3, actions to enhance the reliability of hydro- technical facilities, costs made 88 792 thousands KZT;
- Reconstruction of ash collector if boiler BBF-75-39FB №8 on ECHP with installation emulsifiers of the second generation (battery type), costs made – 22 457,407 thousands KZT.

"Pavlodar Heat Distribution Company", JSC developed Environmental Protection Action Plan for 2008-2010, that were approved by "Irtysh Department of Environmental Regulation and Control of Ministry of Environmental Protection" for the amount of KZT 2 016 thousand. In 2009, 11 actions of 16 planned were fully implemented for the amount of KZT 628 thousand.
The main actions are the following:

Pavlodar Heat Distribution Company:

- Maintenance of dust exhausting system, costs made 11,0 thousand KZT;
- Testing of dust exhausting system, costs made 4,0 thousand KZT;
- Repair of dust exhausting plant at the woodworking site, costs made - 38,0 thousand KZT;
- Testing for operation efficiency of dust exhausting plant of woodworking site, costs made - 6,0 thousand KZT;
- Collection of utilized mercury-containing lamps and delivery of them for demercurization, costs made 14,0 thousand KZT.

Sanitary cleaning of territories of Central Heat Point, transmission and internal network (territories for which Heat Distribution Company is reponsible) from the garbage, costs made 288,0 thousand KZT.

"Ekibastuz Heat Distribution Company", JSC

- Cleaning of walls of the ventilation systems of stationary welding stations from particles and sediments, costs made - 11,0 thousand KZT.
- Cleaning of water supply and sewing wells, costs made - 34,0 thousand KZT.
- Planting of greenery. Planting of flowers, shrubs including at CB, HDN (Heat Distributon Network) 1, HDN-2, costs made - 12,0 thousand KZT.
- Sanitary cleaning of territories of HDN-1, HDN-2 transmission and distribution networks

from garbage, costs made - 205,0 thousand KZT.

Environmental Protection Actions Plan for 2010-2012, that were designed by "Pavlodar Regional Electric Distribution Company", JSC and approved by Ministry of Environmental Protection, amounted to 51 542,3 thousand KZT. In 2009, all 4 planned actions were fully implemented and amounted to 9 261 thousand KZT.
The main ones:

- Planting of greenery (trees and bushes), planting of new lawns and flowerbeds, costs made 100,0 thousand KZT;
- Collection and storage of wastes into a metal container and removal from the plant area to authorized waste ponds, costs made - 389,7 thousand KZT.
- Collection of utilized mercury-containing lamps into specified containers and delivery of them for demercurization, costs made 21,3 thousand KZT.
- Application of shrink sleeves during the repair of CL(Cable Lines)-10/0,4, costs made - 8750,0 thousand KZT;

"SEVKAZENERGO", JSC
To minimize the impact of production processes of the enterprise on the environment and human health "SEVKAZENERGO", JSC developed Environmental protection actions approved by the Ministry of Environmental Protection for the year 2009.
With the aim to form the higher level of environmental awareness and responsibility of managers and employees of "SEVKAZENERGO", JSC it was certificated in accordance with international standards ISO 14001-2006 in November 2007.
Environmental protection actions for the period of 2010-2012 for the amount of 2 237095 thousand KZT was developed by "SEVKAZENERGO", JSC and approved by the Ministry of Environmental Protection.
For 2009 the following actions were planned:

- 12 environmental protection actions for the total amount of 1 007 816 thousand KZT. All 12 actions were performed and costs made 1 458 710 thousand KZT.
- Environmental protection actions performed in 2009 made 145 % of the planned volume.

The main actions were the following:

- Reconstruction of ash collector of boiler station № 2, 5 with installation of emulsifiers of the second generation (battery type), costs made - 150000,0 thousand KZT,
- Repair of worn-out parts of ash collectors, cost made 11 096,0 thousand KZT,
- Re-cultivation of the 2nd section of ash-slag lagoon № 2, costs made 11 549,0 thousand KZT,
- Enlarging of separation dumb of ash lagoon № 3 up to designed level, costs made 6 371,0 thousand KZT,
- Construction of the 3rd section of ash lagoon № 2, costs made 1 274 023,0 thousand KZT.

"Petropavl Heat Distribution Company", LLP
To minimize the impact of production processes of the enterprise on the environment and human health "Petropavl Heat Distribution Company" LLP developed Environmental protection actions approved by the Ministry of Environmental Protection for the period of 2008-2010 for the amount of 240 thousand KZT. In 2009 - the 2 of the planned actions were implemented in amount of 90 thousand KZT.
The main ones:

- Repair and cleaning of aspiration equipment. Costs made 10 thousand KZT;
- Arranging of ecological seminars. Costs made 80 thousand KZT.

"North-Kazakhstan Regional Electric Distribution Company", JSC
To minimize the impact of production processes of the enterprise on the environment and human health JSC "North-Kazakhstan Regional Electric Distribution Company" developed Environmental protection actions plan approved by the Ministry of Environmental Protection for the year 2009.
For 2009 the following were planned:

- 7 environmental protection actions for the total amount of 122 422 thousand KZT. All 7 actions were performed and costs made 144 012 thousand KZT.

Scheduled environmental protection actions were fully performed.

The main ones:

- Repair of worn-out equipment. Costs made 142 763 thousand KZT;
- Monitoring over rational utilization of water for industrial, house-hold and other aims. Costs made 475 thousand KZT;
- Organization of wastes collection and transportation procedure excluding environmental pollution. Costs made 770 thousand KZT.

5. Governmental environmental control

Governmental inspections on environmental issues

In 2009, state authorities carried out the following inspections in the structural subdivisions of "PAVLODARENERGO", JSC:

- unscheduled inspection of CHP-3 ash lagoon by Irtysh Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK;
- scheduled inspection of CHP-2 and CHP-3 by State agency "Irtysh Basin Inspection on Regulation of Using and Protection of Water Resources";
- scheduled inspection of "PAVLODARENERGO", JSC by State agency "Interregional Land Inspection of RK Agency on Land Resources Management in East Kazakhstan and Pavlodar regions";
- scheduled inspection of "PAVLODARENERGO", JSC by Irtysh Department of Ecology Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK;
- unscheduled inspection on implementation of the requirements to eliminate the regional plots from ash slag of ECHP by Irtysh Department of Ecology Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK;
- scheduled inspection of meeting by "PAVLODARENERGO", JSC of labor laws and state of occupational safety and health at CHP-2 and CHP-3 by the State Labor Inspection for Pavlodar region of the Ministry of Labor and Social Protection of Population;
- unscheduled inspection initiated by the management of "PAVLODARENERGO", JSC on putting into operation of new turbine at Ekibastuz Heat Plant and inspected by State Labor Inspection for Pavlodar region of the Ministry of Labor and Social Protection of Population;
- scheduled inspection of CHP-2 and CHP-3 by Board of Department of Committee of State Sanitary and Epidemiological Supervision of Pavlodar;
- scheduled inspection of CHP-2 and CHP-3 by Board of Fire control of Department of Emergency Situations of Pavlodar region;
- scheduled comprehensive inspection of Ekibastuz Heat Plant with participation of all state inspection authorities of State Labor Inspection of Pavlodar region of the Ministry of Labor and Social Protection of Population;
- scheduled sanitary - epidemiological review of working and living conditions of employees of "Pavlodar Heat Distribution Company" by Board of Department of Committee of State Sanitary and Epidemiological Supervision of Pavlodar city;

"Pavlodar Heat Distribution Company", JSC

- scheduled comprehensive inspection of "Ekibastuz Heat Distribution Company" of "Pavlodar Heat Distribution Company", JSC (Ekibastuz) by Department of Control and Social Protection of Committee of Control and Social Protection of Ministry of Labor and Social Protection of Population in Pavlodar region including:
  - Department of control and social protection of Committee of Control and Social Protection of Ministry of Labor and Social Protection of Population for Pavlodar region;
  - Board of Department of Committee of State Sanitary and Epidemiological Supervision of Ekibastuz;
  - Migration Police Department of Department for Internal Affairs of Ekibastuz;
  - Department of Emergency Situations of Ekibastuz (Divison of State Fire Control of Ekibastuz Department for Emergency Situations

"Pavlodar Regional Electric Distribution Company", JSC

- scheduled inspection of technical condition and equipment operation at "PREDC", JSC by Committee on State Energy Control of Ministry of Energy and Mineral Resources;
- scheduled sanitary and epidemiological inspection of working and living conditions of employees of "PREDC", JSC by Board of Department of State Sanitary and Epidemiological Control of Pavlodar;
- scheduled inspection on sanitary rules and norms, as well as hygienic standards at "PREDC", JSC by

State Agency "Board of State Sanitary and Epidemiological Supervision of the Ministry of Health of RK;
- unscheduled inspection on compliance by "PREDC", JSC of environmental laws of the RK by Irtysh Department of Ecology Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK;
- unscheduled inspection on compliance by "PREDC", JSC of environmental laws of the RK by Irtysh Department of Ecology Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK;

As a result of inspection, some breaches detected and completely eliminated by the moment.

"SEVKAZENERGO", JSC
- Unscheduled inspection by Esilsky Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK for North-Kazakhstan Region on compliance of the RK ecological laws at discharges of partially-clean waters from the Beloye Lake into the Ishim River;
- Scheduled inspection by Esilsky Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK for North-Kazakhstan Region on the subject of natural resources usage in order to establish limits and certifying documentations (the Company is using 7 ha);
- Scheduled inspection by North-Kazakhstan Territorial Division of Ishimsky Basin Inspection on Regulation of usage and protection of water resources of RK.
- Unscheduled inspection by Esilsky Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK for North-Kazakhstan Region (on the basis of Order of Prosecutors Office for North-Kazakhstan Region) on compliance with legislation of RK.
- Scheduled inspection by Board of Department of Committee of State Sanitary and Epidemiological Supervision of Ministry of Public Health of the RK for North-Kazakhstan Region on compliance of RK Law "On Sanitary and Epidemiological welfare of population" № 361-11 dated 04.12.2002.

"North Kazakhstan REDC", JSC
- Scheduled inspection by Esilsky Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK for North-Kazakhstan Region

"North Kazakhstan Heat Distribution Company", LLP
- Scheduled inspection by Esilsky Department of Ecology of Committee of Environmental Regulation and Control of the Ministry of Environmental Protection of RK for North-Kazakhstan Region on compliance with legislation of RK.
- Scheduled inspection by Board of Department of Committee of State Sanitary and Epidemiological Supervision of Ministry of Public Health of the RK for North-Kazakhstan Region on compliance of the RK Law "Sanitary and epidemiological welfare of population", "Sanitary and epidemiological requirements to designing of industrial facilities", "On obligatory preliminary and periodical medical examinations";

As a result of inspection, some breaches detected and completely eliminated by the moment.

Information on provided reports on environmental issues:

№	Type of information provided	Addressee of the information (authority or official)	Deadline
	Form № 2-TI (Technical Indicators) air (annual) consolidated report of "Pavlodarenergo", JSC	Regional Statistics Agency	by January, 15
	Form № 4-E (Environmental) on current costs for environmental protection (annual)	Regional Statistics Agency	by February 23
	Form №2-TI air (annual) on CHP-2, CHP-3, ECHP, "Pavlodar Heat Distribution Network", JSC, "PEDC", JSC	Department of Ecology (Pavlodar) Esilsky Department of	by January, 15

		Ecology (Petropavlovsk)	
4	Form №2-TI water facilities (annual) on CHP-2, CHP-3, ECHP, "Pavlodar Heat Distribution Network", JSC, "PEDC", JSC	Basin Inspection (Petropavlovsk)	by January, 15
	Form №1WSC (Water Supply and Canalization) of "PAVLODARENERGO", JSC	Regional Statistics Agency (Pavlodar)	by February, 22
	Form "Report on hazardous wastes" (annual) on CHP-2, CHP-3, ECHP, "Pavlodar Heat Distribution Network", JSC, "PEDC", JSC	Department of Ecology (Pavlodar) Esilsky Department of Ecology (Petropavlovsk)	by March, 1
	Environmental Protection Action Plan of CHP-2, CHP-3, ECHP, "Pavlodar Heat Distribution Network", JSC, "PREDC", JSC	Ministry of Environmental Protection of RK, Department of Ecology (Pavlodar)	by January, 10
	Report on environmental protection actions implementation of CHPs, REDCs, HDCs	Department of Ecology (Pavlodar) Esilsky Department of Ecology (Petropavlovsk)	Every quarter, half a year, 9 months, Year
	Report on production environmental monitoring of "PAVLODARENERGO",JSC	Ministry of Environmental Protection of RK, Department of Ecology (Pavlodar)	Every quarter, half a year, 9 months, Year
	Report on production environmental monitoring of Pavlodar and Ekibastuz Heat Distribution Companies	Department of Ecology (Pavlodar)	Every quarter, half a year, 9 months, Year
11	Form №2-TI air (annual) on CHP-2, CHP-3, ECHP, "Pavlodar Heat Distribution Network", JSC, "PEDC", JSC	Esilsky Department of Ecology (Petropavlovsk)	by January, 15

No claims on the reports provided. All reports were submitted in due time.

6. Implementation of environmental investment activities

Development and implementation of investment programs the Company due to the limited resources of the existing ash dumps, increased requirements of current environmental legislation. In addition, this program will increase sales of electricity and heat energy, projected with growth in energy consumption.

"PAVLODARENERGO", JSC

Construction of ash dumps (CHP-3, CHP-2, Ekibastuz CHP)
Since 2009 the company started implementation (design and preliminary works on ash pond drainage system are being implemented) of the major investment project – building of new ash ponds for CHP-3 and CHP-2. The scheduled time of termination of the building works is 2012 for CHP-3 and 2013 for CHP-2. As for Ekibastuz CHP, the works start in 2011, end in 2012.
Ash pond of CHP-2 and CHP-3 constitute a single industrial unit, the western part of which is presented by CHP-3 ash pond, and the eastern part – by CHP-2 ash pond.
Ash ponds will be constructed on the site within the bounds of "PAVLODARENERGO", JSC CHP-3 ground area.
The site for construction, a section borders upon the acting ash pond of CHP-3 within the existing land allocation of 55 ha.
Ash pond of CHP-2 will be constructed on the site within the bounds of "PAVLODARENERGO", JSC CHP-2 ground area.
The site for construction, a section borders upon the acting ash pond of CHP-2 within the existing land allocation of 63.7382 ha.

The construction budget for CHP-2 ash pond is 2.853 billion KZT, CHP-3 ash pond -2.585 billion KZT, Ekibastuz CHP ash pond – 0.268 billion KZT.

Reconstruction of ash catching facility including installation second generation battery emulsifiers.
Beginning from 2009 a stage-by-stage installation of emulsifiers on CHP-2, CHP-3 and Ekibastuz CHP boilers was carried out.
Due to implementation of this activity the ash emissions in flue gases are decreased by 4-5 times, sulfur emissions – by factor of 1.2 for each boiler. By 2015 all 11 boilers will be equipped with such emulsifiers.
Emulsifiers on boilers #3 and #5 at CHP-3, boiler #5 CHP-2, and boiler #8 at Ekibastuz CHP have been already installed. The battery titanium emulsifiers of the second generation are purchased from a manufacturing company – "SVERDLOVENERGO", OJSC (the energy and electrification company).

Modernization of flue gas cleaning system.
The existing system of flue gas purification consisting of a scrubber with preppies Venturi of CHP-2 and CHP-3 boilers has the ash collecting efficiency 97%, Ekibastuz CHP – 98%. The battery emulsifiers being installed have the efficiency of 99.5%, which allows decreasing ash emissions and will result in paying less for environmental emissions. During the installation of battery emulsifiers, the construction works include the dismantling of a Venturi pipe with the change of advance design to a scrubber. An emulsifier swirler or a drop catcher of ring-type is installed into the existing or installed (depending on the project) scrubber along to the gas flows. To prevent a low temperature corrosion of a flue gas path, a hot air feeding to an assembly box above the scrubber is provided after the emulsifiers.
Modernization of ash catching facilities allows to reduce the output concentration of coal ash to 250-300mg/m3, as well as to suppress sulfur oxide without any additives by 5-15%.

Measures to reduce the negative impact on the environment
- Modernization of boiler units in order to change a combustion mode and decrease NOx emissions (started in 2009);

– Pressure rise on the existing Venturi pipes (ash catcher) from 5.2 atm to 6.5-7 atm. Due to this, ash cacher efficiency increases from 96.8% to 97.2%, and the annual emissions amount decreases by 3, 215 tons. Continued works on elimination of use of chrysotile asbestos and its gradual substitution by basalt-containing heat-insulating materials. The difference between the lifetime of new and old materials is 45 years, and heat losses is 10 times lower, and differs by higher thermal insulation properties. It is planned to decrease losses with heat radiation into the environment by the factor of 1.6, which allows decreasing of heat flow losses 2.1% and results in heat loss decrease during manufacturing process by 6 thousand Gcal.

- Started installation of stationary gas analyzers which measure SOx, NOx, CO2, dust emissions in flue gases during their continuous operation..

Upgrading of basic equipment, commissioning of new capacities
- installation of boiler BBP-420 (#1 for CHP-3), commissioning- December 2010;
- installation of turbine PT-65/75 (#1 for CHP-3) commissioning in 2011;
- replacement turbine PR-25 (#1 for CHP-2);
- installation of turbine PT-30 (# 2 for ECHP).

Measures to reduce fuel consumption by reducing the norms specific consumption and commercial losses
Mounted turbines are equipped with new accessories, including electric motors of more advanced designs, cost savings of electricity and heat for own needs will be achieved, which correspondingly increase the energy efficiency of CHP. Is constantly working to reduce fuel consumption for energy.
The energy-saving program is closely connected with the objectives of environmental management of "PE", JSC and its subsudiaries. Thus, in 2009 in JSC " Pavlodar Heat Distribution Company " the decrease of extra losses due to the defective insulation restoration is equal to 44.273 thousands Gcal in Pavlodar, 54.779 thousand Gcal in Ekibastuz. In JSC "PREDK" the loss decrease is 14.943 million kWh for 2009
Main activities, planned for year 2010:
- installation of second generation emulsifiers on 4 boilers; repair of worn elements of ash catching facilities;
- reconstruction of boilers aimed on decrease of hazardous emissions into the atmosphere;
- installation of nitrogen oxide, sulphur oxide, carbon dioxide and ash meter equipment;
- construction of ash dump for CHP-3;
- repair of separating dams of ash dump;
- implementation of industrial environmental control;
- informing the public about the Company's impact on the environment.

"PAVLODARENERGO", JSC was one of the first companies in Kazakhstan that received a certificate confirming compliance of its activity with international environmental standards ISO 14000.
This year the company plans to start preparing for the certification to confirm its compliance with ISO 14001 (Environment Management System), as well as the ISO 9001 certification (Quality Management System) in "PREDC", JSC and "PHDC", JSC. Preparations for OHSAS 18001 certification (Occupational Health & Safety Management System) will be implemented in "PE", JSC, and its subsidiaries.

"SEVKAZENERGO", JSC

Construction of ash pond
In September 2008 the largest investment project for the construction of Section ash pond № 3 № 2 was initiated. The planned completion date of the project is October 2011. The total construction period is 37 months. Projected capacity of the as pond is 8,74 millions m3, expected lifetime of the ash pond is 12 years. The project includes building of dams and increase of the life of ash ponds up to 25 years. Effective area is 202 ha. The total length of the dam is 5 kilometers. Total costs of the project are 3,5 billions KZT.

Reconstruction of ash catching facility including installation second generation battery emulsifiers.

Starting from 2009, installation of batteries of II generation titanium emulsifiers is scheduled. Batteries of II generation titanium emulsifiers are purchased from the manufacturer OJSC "Power Engineering and Electrification "SVERDLOVENERGO". Due to implementation of this activity, there is a decrease in emissions amounts of ash from flue gases by 6 times and emissions of sulfur by 1,2 times for each boiler. Emulsifiers are installed on the boilers № 2, 3, 5, 6, 10. Before 2013 emulsifiers will be equipped with on all of the 11 boilers.

Measures to reduce the negative impact on the environment

- Modernization of boiler units in order to change a combustion mode and decrease NOx emissions (started in 2009)
- Pressure rise on the existing Venturi pipes (ash catcher) from 5.2 atm to 6.5-7 atm. Due to this, ash cacher efficiency increases from 96.8% to 97.2%, and the annual emissions amount decreases by 3, 215 tons.
- Continued works on elimination of use of asbestos and its gradual substitution by basalt-containing heat-insulating materials. It is planned to decrease losses with heat radiation into the environment by the factor of 1.6, which allows decreasing of heat flow losses 2.1% and results in heat loss decrease during manufacturing process by 8 thousand Gcal.
- Started installation of stationary gas analyzers which measure SOx, NOx, CO2, dust emissions in flue gases during their continuous operation

Upgrading of basic equipment, commissioning of new capacities

- installation of boiler E-270-9,8-540KGT;
- installation of turbine T-50/60-90;

Installation of a new turbine will reduce the consumption by 317 kcal / kWh and reduce the heat consumption for production of electricity and heat energy by 84 thousands Gcal.
The company conducts continuous work on decrease of fuel consumption used for production of 1 kWh and 1 Gcal.
Activities on energy efficiency system, reduce fuel consumption by lowering the standards specific consumption and commercial losses
Assembled CHP turbines are equipped with new accessories, including electric motors for improved designs due to what will be achieved cost savings of electricity and heat for own needs, which correspondingly increase the efficiency of the CHP. Reducing unit cost would be 317 kcal / kW and total heat consumption for production of electricity and thermal energy will amount to 84 thousands Gcal. Works on reducing fuel consumption for energy producing are held constantly. Introduction of VFD only on group of tank pumps will save over 1.5 million kWh energy per year. Variable frequency drives are installed on the circulation, tank, makeup pumps, dust collective facilities and dust feeders. The energy-saving program is closely connected with the objectives of environmental management of CHP-2.
As a result of the decisions above, "SEVKAZENERGO", JSC annually saves up to 9 thousand tons of fuel. Implementations of the above measures will reduce emissions into the atmosphere by 37 thousand tons.
"SEVKAZENERGO", JSC is exploring the implementation of such innovative technologies such as renewable energy sources (RES). Savings from the introduction of heat pumps will be about 7 thousand tons of fuel a year.

Activities for 2010 amounted to 1,5 billion KZT and contain of:

- installation of second generation emulsifiers on 4 boilers;
- repair of worn elements of ash catching facilities;
- reconstruction of boilers aimed on decrease of hazardous emissions into the atmosphere;
- installation of nitrogen oxide, sulphur oxide, carbon dioxide and ash meter equipment;
- construction of ash dump for CHP-3;
- repair of separating dams of ash dump;
- implementation of industrial environmental control;
- informing the public about the Company's impact on the environment.

"SEVKAZENERGO", JSC was one of the first companies in Kazakhstan that received a certificate confirming compliance of its activity with international environmental standards ISO 14000. This year the

company plans to start preparing for the certification to confirm its compliance with ISO 14001 (Environment Management System), and preparation for ISO 9001 certification (Quality Management System) and OHSAS 18001 certification (Occupational Health & Safety Management System), ISO/1EC17025:2005 system (General requirements for the competence of testing and calibration laboratories).
The dynamics of funds invested in the environmental activities of “SEVKAZENERGO”, JSC increased over the period 2007 - 2010 years from 74 thousand to 1,5 billion KZT. Funds of the investment program of “SEVKAZENERGO”, JSC over the period 2007-2010 increased from 1,7 billions to 2,011 billions KZT, main part of the investments was used for implementation of environmental activities. Upon the execution of environmental activities for the year 2009 on the fact there was over-fulfillment of the planned figures by 45% (1,5 billion KZT instead of 1 billion KZT).

The company pays great attention to the study of innovative energy technologies and their possible applications in production. Program development activities for renewable energy is one of the promising areas of strategic development of the Company.

7. Compliance with the safety and health issues

Social and labour relationships

The main purpose of CAEPCO, JSC in social area is to increase the level of social protection of Workers of the company, their family members, non-working pensioners, and retired workers of the company and disabled people. Due to this, discounts, compensations and guarantees policies were developed by the company.

Workers were provided by special cloth and shoes, sanitary-prophylactics means and Personal Protective Devices, milk or other equivalent product, soap in accordance with current Kazakh legislations. Lump sum payments are done at birth of a child, and the funeral of close relatives.

Summer camps are being organized for children of workers of the company, in Petropavlovsk parents pay 20% of the cost of the pass. In Pavlodar on the basis of the holiday center “Energetic”, the company organized a children’s health camp “Electronic”.

Special attention is paid to the programs of diagnosing and medical treatment of the employees, especially operation personnel. Annually, at the expense of the employer's, medical examinations are performed, daily mandatory pre-shift check-ups of operational staff are done in order to analyze the state of health of employees. Each subsidiary of the company is equipped with medical rooms, service providers, and medical professionals: physiotherapists, electricity and light therapy, laser therapy, massage and organize receptions narrow specialists. During the last several years sanatorium-preventorium “Energetic successfully operates and helps to improve the health of the energy system employees.

In order to socially support workers of the enterprises having the status of large families, or families of workers with children with disabilities, the administration assists their workers materially at the beginning of the school year for each child of school age. Gifts for children of employees of the company are acquired on Christmas holidays.

The management of the company pays great attention on training managers, specialists and workers. To improve the educational level of its personnel, the company has a system of motivation, which provides educational repayment amounted to 100% of average earnings and compensation of travel in both directions, if the institution is located outside of Petropavlovsk. In addition, workers have the opportunity to obtain interest-free loan for tuition purposes.

“SEVKAZENERGO”, JSC issues a newspaper named “Energetic of North Kazakhstan” and “PAVLODARENERGO”, JSC issues a one named “Energetic” in order to increase the level of corporative culture and maintain the image of the profession, and informs the public about news of the company and industry.

Department of Labor conducts a systematic picture of the working day of personnel on the plant in order to identify the reserves to increase labor productivity, improve equipment utilization, efficient time consumption meters. It identifies weaknesses in the organization and sanitary conditions of labor and production causing losses or inefficient use of working time. Based on analysis of pictures of the working day, measures on improvement of the organization of work were worked out, deadlines and executing bodies were approved by the orders. Following the verification of the implementation of activities under the approved orders, some of the activities were scheduled to be performed in 2010.

Requirements of the Labor Code of the Republic of Kazakhstan regarding public health and labor safety are being fulfilled:

- training of workers to safety issues, improvement of professional skill and acquisition of adjacent specialties was organized through the educational centre;
- Certification of workplaces was performed;
- Workers were provided by special cloth and shoes , sanitary-prophylactics means and Personal Protective Devices in accordance with acting standards;
- Contracts of Employer’s Liability Compulsory Insurance for injuries or disease arising out of their employment and contracts of obligatory insurance of Civil Liability of owners of the objects which activity is connected with danger of injury to the third parties;
- constant monitoring of working conditions is made;
- preliminary and periodic medical examination of workers is organized;

- improvement of workers in sanatorium-dispensary is arranged.

Report Data on Safety and Health

№	Name of reports	Submitted to	Date of submitting
1.	Report on traumatism 7-TPD (traumatism and professional diseases) (annually)	Regional Statistics Agency	by February, 25
2	Report on traumatism (quarterly, annually)	Regional Statistics Agency Territorial Inspectorate "Committee for State Power Control"; Public Institution "Department for labor and social protection of the RK for North-Kazakhstan Oblast"	by 10th day of every month
3.	Monitoring of labor safety measures	Public Institution "Department for labor and social protection of the RK for North-Kazakhstan Oblast"	by July 1, by January 1

8. Environmental regulatory and legal framework in Republic of Kazakhstan

In the context of economic activity the Company complies with the requirements of current legislation in the field of environmental protection, regulated environmental By Ecological Code and other regulatory legal acts of the Republic of Kazakhstan.

Measure on compliance of environmental requirements
List of regulatory legal acts used by environmental services of the Company enterprises

Document type	Document name	Number	Effective date
Code	Labor Code of the Republic of Kazakhstan	252-III	15.05.2007
Code	Ecology Code	212	09.01.07
Code	Water Code	481	09.07.03
Code	Land Code	442	20.06.03
Code	On taxes and other obligatory payments into budget	99-IV	10.12.2008
Code	On Public health and Public Health System	193-IV	18.09.2009
Law	On obligatory ecological insurance	93	13.12.05
Law	On sub-soils and subsoil using.	2828	27.01.96
Law	On Sanitary and epidemiological welfare of population	361	04.12.02
Law	On industrial safety at Hazardous industrial facilities.	314	03.04.02
Law	On safety of chemical products.	302	21.07.07
Law	On railway transportation	266	08 .12.01
RK Government Order	On approval of Regulation on state recording of sources of emissions of greenhouse gases into atmosphere and consumption of ozone depleters.	124	08.02.2008
RK Government Order	On approval of Regulation on limit, suspension or reducing of emissions of greenhouse gases into atmosphere	128	11.02.2008
RK Government Order	On approval of Regulation on inventorying of emissions of greenhouse gases and consumption of ozone depleters.	5094	13.12.2007
RK Government Order	On approval of Regulation on development and approval of standards of maximum Permissible Emissions of gases and consumption of ozone depleters.	5087	13.12.2007

RK Government Order	On approval of Rules of formation of liquidation funds of wastes disposal polygons.	591	10.07.07
RK Government Order	On approval of Technical Regulation "Requirements to environmental emissions while burning of different types of fuel in boilers of CHP"	1232	14.12.07
Order of the Minister of Environmental Protection of the RK	On approval of wastes classifier.	169-p	31.05.07
Order of the Minister of Environmental Protection of the RK	On approval of Form of Passport of hazardous wastes.	128-p	30.04 .07
Order of the Deputy Minister of Environmental Protection of the RK	On approval of Regulation including terms of sub-soil using into permits for environmental emissions.	112-p	16.04.07
Order of the Minister of Environmental Protection of the RK	On approval of Form of documents for giving permits for environmental emissions into environment and rules of their filling.	94-p	30.03.07
Order of the Minister of Environmental Protection of the RK	On approval of Rules of public consultations.	135-п	07.05.07
Order of the Minister of Environmental Protection of the RK	On approval of Procedure of determining of standards of environmental emissions.	158-п	21.05.07г.
Order of the Minister of Environmental Protection of the RK	On approval of Regulation on harmonization of programs for industrial and environmental control and requirements to reports on results of industrial and environmental control	123-п	24.04.07
Order of the Minister of Environmental Protection of the RK	On approval of Standard list of environmental protection actions.	119-п	24.04.07
Order of the Deputy Minster of Public Health of the RK	On approval of Sanitary-epidemiological rules and norms "Sanitary-epidemiological requirements to designing of industrial facilities".	334	08.07.05
RK Standards	ISO	14001	2006
International Standards	ISO	14001	2004
Managing Normative Documentation	Methodical instructions on determining the level of contamination of environmental components with toxic substances of production and consumption wastes.	03.3.0.4.01-96	1996
Managing Normative Documentation	Procedure of standardization of volumes of formation and disposal of production wastes.	03.1.0.3.01-96	1996

RK Government Order	Procedure to determine gross and specific emissions of contaminates into atmosphere from boilers at CHP.	34.02.305-98	1998
RK Government Order	Regulation on technical operation of power stations and networks in RK.	34 PK.20.501-02	2002
Construction standards and regulations	Internal water pipeline and sewage system of buildings.	4.01-41-06	2006
Sanitary regulations and standards	Sanitary operating instructions with mercury, its compounds and devices filled with mercury.	1.10.083-94	1994
Rules	Rules of freight traffic by railways	429-I	23.11.04
National Standards	Ferrous scrap metal. General technical conditions.	2787-75	1975
National Standards	Metal scrap and scraps of non-ferrous metal and alloys.	1639-93	1993
National Standards	Hazardous cargoes. Classifying and marking.	19433-88	1988
National Standards	System of labor safety standards. Industrial equipment. General safety rules.	12.2.003-91	1991
National Standards	Occupational safety standards system. Hazardous substances. Classifying and general safety requirements.	12.1.007-76	1976
National Standards	Occupational safety standards system. Industrial equipment. General ergonomic requirements.	12.2.049-80	1980

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Environmental and Social Action Plan of «Central-Asian ElectricPower Corporation», JSC for the year 2009

ESAP – corporate/ main CHPs and distribution companies								
No	**Action**	**Environmental Risks / Liability / Benefit**	**Legislative Requirement / Best Practice**	**Investment Needs / Resources (Euros ,000s)**	**Timetable To be completed by the End of Year**	**Target and Evaluation Criteria for Successful Completion**	**Comment**	**Report**
1	**Publish a corporate EHS report and make it publicly available (including on the internet).** The report to be in compliance with the EBRD's annual reporting requirement, and to include the following information: - Key environmental performance indicators (KPIs) - Environmental performance - Greenhouse gas emissions (CO_2) for each plant and Company - Legislative issues, including compliance and fines/penalties - Health and safety performance including information on statistics - social and labor issues	Ensure that best practice is adopted across the organization and that there is transparency in environmental performance. Reporting of environmental performance to stakeholders.	Best Practice and EBRD requirement	Internal resources	2009 - then annually	Publication of the report	EHS report should take into account the problem of future investment plans necessary for good quality of energy and heat delivery to the communities. The report should inform the community on the new procedures for client contacts, community interaction in accordance with the Stakeholder Engagement Plan.	**SEVKAZENERGO**: At the end of the 1st quarter, the corporate report on annual results of 2010 will be prepared and published in the media **PAVLODARENERGO**: Report article on work results of 2008 was published in "Energetic" newspaper #11 (2346) dated 19 June, 2009 under the headline "The results resumed and proved satisfactory". The report can be found in the Internet at: http://www.capec.kz/page.php?page_id=40&lang=1&parent_id=24
	Retrenchment. Develop a retrenchment porgramme, whenever more than 100 people are to be laid off any subsidiary in one go**.**	Need to ensure appropriate systems are in place when dealing with any staff reductions, ad that any reductions are made in a transparent manner to minimize social impacts and provide as much support to staff as	EBRD and best practice	Internal	2009	Programme in place	Any major retrenchment needs to be communicated to the Bank at the time of decision making, as well as summarized in the Annual report	

		possible (including retaining if needed)						
	Stakeholder Engagement Programme (SEP). Develop an SEP to address both worker and public stakeholder engagement prohrammes at the individual sites as well as corporate. Draft prepared by Atkins in January 2009 – to be updated annually by the Company and audited min every 5 years externally	SEP is required for both corporate as well as individual sites, This needs to include a grievance plan (complaints procedures) to allow staff and external stakeholders (public, etc) to voice concerns, opinions etc. Good stakeholder engagement reduce risk of civil unrest and public concern.	EBRD	Internal and external	2009	SEP in place updated on a annual basis with summary provided to the Bank in Annual Report	SEP will allow for good public communications program.	
	Management systems – ISO, OHSAS, EMAS **CHP units (PetroPav and Pavlodar Energo, Eki CHP)** - Develop and implement OHSAS 18001 Health and Safety Management System (EMS). Maintain ISO 14001 certification. **Distribution companies**: propose the exact timeline for the implementation of ISO 14001 Environmental Management System (EMS).	Ensure that best practice is adopted across the organization. External certification to ISO14001 and OHSAS 18801 provides third party assurance of performance and a commitment to continual improvement.	Best Practice and EBRD requirement	Internal resources	**PTETS** - 2010/12 **PavlodarEnergo CHP** – 2009/2010 **Distribution companies**: 2009 – selection of the contractor for ISO training and preliminary training 2011- implementation CAEPCO (holding Company) to be certified by 2012	Certification to ISO14001 and OHSAS 18001 both at	**PTETS** - ISO 14001 certification attained in 2007. The international certification body (company) will be changed every 5 years. **PavlodarEnergo CHP:** EMS implementation planned by the end of 2008. **Distribution companies:** EMS implementation needs the uniform group approach, as a result the real deadline for implementation should be in 2011 with the first selection of consultants in 2009	**SEVKAZENERGO**: In 2009, using the results of 2008, the audit of ISO 14000 system was performed. Inspection audit of 2009 is planned for the end of the 2nd quarter in 2010. The market of suppliers of ISO 9000, ISO 14000, OHSAS 18000 systems is being developed. The certification is planned to be held with the participation of TUV International. **PAVLODARENERGO**: The certification authority "TÜV Rheinland Inter Ctrt" granted a certificate of conformity, registration number 751100406, confirming that Environmental Management System has been implemented and is being maintained in accordance with the requirements of ISO14001:2004.
2	**Prepare a formal ESIA**	To ensure that the proposed	Best Practice and EBRD	Internal		Completion of	The ESIA will need to include	**SEVKAZENERGO:**

	(Environmental and Social Impact Assessment) for all future development projects that fall under Annex 1 of EU EIA Directive and National legislation (ie new HV lines above 110 Kv 10 km, any new Boiler plant above 300 MW thermal, any new ash pond above 25 ha) **In all distribution companies** ESIA will cover projects above the initial limit – proposed limit: more than 15 km of 220 kV lines (or higher voltage), more than 50 km of 110 kV lines or new connectivity contracts of more than 10,000 Gcal/year or new areas supplied with 30 MW, or new lines for more than 3000 new clients covered by Investment Program.	projects minimize environmental impacts. The ESIA will ensure that full consultation takes place and that any project will use European BAT standards as a benchmark as well as ensure appropriate stakeholder consultations are undertaken and projects meet Kazakhstan legislation. **Distribution companies** - current European standards set the initial limit of 15 km of 220 kV power lines for Environmental Impact Assessment. However due to significant social importance of energy and heat distribution, and necessity of assessment of possible consequences Consultant recommend few more precise limits.	requirement	resources	**CHPs**: 2009 onwards **Distribution lines:** 2009 – for all new 220 kV and new 110 kV lines, 2010 – for other investments	ESIA report and publication of a None Technical Summary (NTS) on the company web site. Provision of a copy of a None Technical Summary to Bank and publishing an NTS on the Company web site	public consultation, an assessment of cumulative environmental impacts from the investments and existing operations, as well as social issues. The ESIA will also need to compare the project with Kazakhstan and EU environmental standards and this information included in the publicly available documentation. The Bank will provide guidance and training on the procedures which should be implemented into the corporate EMS. The Bank as an investor will need to be consulted on the ESIA process prior to public consultation. The NTS will be a short (circa 10 pages) in none technical language summary of the project and how it meets Kazakh and international best practice standards.	Pre-EIA for the boiler installation project of st.№ 8 was conducted. In order to suppress dust emissions and reduce SOx, EIA in project development of implementation of 2nd generation emulsifiers is being carried out. In order to reduce NOx, EIA for modernization of boilers by changing the mode of combustion is being carried out. At the end of the 1st quarter, the corporate report on annual results of 2010 will be prepared and published in the media **PAVLODARENERGO:** During the period of the investment project implementation, at the design stage the Ecological State Examination assessment is being implemented and includes those points that may have any environmental impact. In 2009 the projects on installation of battery emulsifiers of II generation for boilers #5 CHP-3 and #5 CHP-2 that had been fulfilled were endorsed by Pavlodar State Sanitary-and-epidemiologic Institution and State institution "Irtyshsk Environmental Department of Environmental regulation and control committee of Ministry of Environment".
3	Ensure that all new projects, extensions, plant and	To ensure that future projects minimize environmental	Best Practice and EBRD requirement	Will vary by project.	**CHPs**: On-going		In **PTETS**: This will include an overview of unit no 8. Unit no 8	**SEVKAZENERGO**:

	associated infrastructure are to be designed to meet both Kazak and EU environmental standards. In **PTETS**, unit no 8 will be reconstructed to meet Kazak standards and will include continuous monitoring systems installed prior to commissioning.	impacts. The assessment at design stage will ensure that any project will comply as far as practical with European BAT, stakeholder requirements and Kazakhstan legislation.			**Distribution companies**: from 2011 all new heat transmission pipelines should meet EU energy efficiency standards (pre-isolated tubes, proper quality of laying, geotechnical review etc.).		will be designed to meet Kazak standards for rehabilitated units in place from 2013 (Decree of the Government of Republic of Kazakhstan from December 14, 2007, № 1232 – Appendix 3 of the Ordinance). All new boilers for which a building permit is to be attained post 1st January 2009, will attain EU Large Combustion Plant Directive standards for existing plants **(dust 50 mg/Nm3, Sox 800-400 mg/Nm3 depending on size of boiler)**	Boiler number 8 is designed in accordance with Kazakhstan's technical regulations for plants, taking effect in 2013. Gas analyzing system for permanent monitoring of pollutants in flue gases will be introduced. **PAVLODARENERGO**: The following activities were implemented: "Environmental Impact Assessment" to the project "Reconstruction of ash-catcher of boiler BKZ-420-140 #5 CHP-3 "Pavlodarenergo" JSC with the installation of battery emulsifiers of II generation" "Environmental Impact Assessment" to the working project "Ash catcher of boiler BKZ-160(190)-100 # 5 CHP-2 "Pavlodarenergo" JSC with the installation of battery emulsifiers of II generation"
4	Improve the physical condition of the mazout storage areas.	Risks are presented to land, ground and surface waters from chemical storage areas at both sites, in particular mazout storage. Improved storage of this material will minimize risks. Undertake site assessment by 2012 and base don this develop clean up plant There are 325 tanks in Pavlodar distribution company and app	Best Practice and EBRD requirement	**PTETS:** 300 k site investigations **Pavlodar-Energo CHP:** 200 Pavlodar and Petropavlovsk **Distribution plants**: 500	2012	Presentation of management plan to EBRD and shareholders and agree action plan to clean up site		**SEVKAZENERGO:** Implementation date has not been reached yet. **PAVLODARENERGO:** Plans for Pavlodar CHP-3 and CHP-2 and Ekibastuz CHP were developed and published in newspaper "Energetic" #3(2338) dated 13 February, 2009 and #5(2340) dated 20 March, 2009.

		100 tanks in Petropavlovsk distribution company.						
5	Undertake a BAT (Best Available Techniques) Assessment **in all CHP units** and develop a programme to evaluate the scope for reduction of NOx and sulphur dioxide (SO_2) emissions levels comparable with the Large Combustion Plant Directive (as far as possible) and compliance with Kazak legislation, notably more stringent dust emission from 2013 (phase 1) and SOx emission (phase 2)	The EBRD requires that all new generating assets achieve new plant standards as described by EU Large Combustion Plant Directive. Existing plants should as minimum comply with Kazak standards and a plan be put in place to comply with existing plant standards as described within the EU LCPD Note. Current emissions exceed EU standards in all cases as well as Kazak requirements for new plants	Best Practice and EBRD requirement	Internal resources	**PTETS:** Develop plan 2012 and submit to shareholders and EBRD. Implement 1st stage by 2013-2016 and 2nd stage by 2020 **PavlodarEnergo CHP** - 2010	Presentation of the report to EBRD representatives, later publication of the summary of the report.	A BAT Assessment will set out the scope of any improvement works and the program for implementation. This will include the retro-fitting equipment.	Implementation date has not been reached yet.
6	**In all CHPs:** As part of the BAT Assessment develop a plan to limit dust emissions, through combination of new investments and upgrade of existing assets. The plan will set out a road map to attain at **first a under 300 mg/Nm3 for the plant** (Kazak national standards from 2013) and then for each stack 100 mg/Nm3 between 2016-2020 (EU Standards under LCP – IPPC benchmarks are for below 50) . The BAT Assessment will review the performance of the new type emulgators vs. ESPs	Current emissions exceed EU standards in all cases and given the fuel parameters and local technology EU standards will not be met in the medium to long term. International standards is 50 mg/Nm3, BAT would be in the 20-30 mg/Nm3 range. The Company will upgrade the air abatement equipment, however current technology and fuel will not allow EU standards to be met. The plant swill need to undertake a Best Available Techniques (BAT) to look at the available	Best Practice and EBRD requirement	Internal resources CAPEX tbc Approx. 15-20 mln Euro	Plan by 2012 2010-2012 undertake a BAT Assessment to consider how to attain best international practice emission standards such as EU LCP Directive requirements – i.e. 50-100 mg/Nm3. ToR for this study to be agreed with the lenders. Attain below 300 mg/Nm3 average	Provision of plant and then BAT Study to the lenders. Publication of information on planned investments Achieving emission levels.	Dust emissions are highly visible and all plant worldwide uses dust abatement technology. Dust also can cause respiratory health problems. The Company must address dust emission as a priority, even if neighbouring plants are significant sources of pollution. The use of emulgators (wet scrubbers) can be viewed as BAT in terms of availability and reliability as well as effectiveness. The new units should attain below 270 mg/nm3 emission level. . The BAT study	**SEVKAZENERGO**: Plan for installation of 2nd generation titan emulsifiers on all boilers by 2013 is developed Plan is being implemented on time. By the year 2012, taking into account activities undertaken, a new plan on reduction of emissions will be prepared **PAVLODARENERGO**: With a view of Action Plan realisation for the maximum possible decrease of emissions, and according to requirements of "Technical

	and confirm whether new emulgators or EPS should be installed on all boilers post 2010 at the plant to attain national and EU environmental standards.	technologies that could be applied to the plant. The plan needs to consider replacing the emulgators with ESP (electrostatic precipitators) that have been successfully used at other power station **PavlodarEnergo**: Data for CHP-2 gives dust levels in the range 1,014 – 1,712 mg/Nm^3. Data for CHP-3 gives dust levels in the range 1,552 – 1,695 mg/Nm^3.			emissions from CHP by 2013 that will be operational post 2015 As a long term aim tend to approach 50-100 mg/Nm3 average on the stack or min 99.8 % efficiency of dust removal		will review the performance of the ESPs and confirm whether they meet the BAT definitions.	regulation on the requirements for the emissions produced by the combustion of various types of fuels in boilers of combined-heat-and-power plants" the reconstruction works of ash catchers for boiler #5 CHP-3 and boiler #5 CHP-2 have been implemented.
7	**In all CHPs:** Implementation of continuous emission monitoring systems (CEMS) for all stack emissions. CEMS will be installed on each boiler retrofitted with a new emulgator or ESP starting from 2009.	Although legal compliance is generally demonstrable, the current monitoring programmes and techniques do not allow ready comparison with EU standards or other published data. There is no continuous monitoring in place, only periodic monitoring for some key parameters. CEMS will allow active control of emissions rather than reactive.	Best Practice and EBRD requirement	PTETS: 200 **Pavlodar-Energo**: CAPEX	By 2013 on all boilers at CHPs. Program to be developed as part of BAT Assessment	Commissioning of CEMS at all appropriate sources	All new boiler plant should be installed with CEMS to ensure it meets the reliability, confidence limits and reporting requirements of the LCPD. Existing boiler plant should be fitted with CEMS no later than 2013 to verify that national dust emission levels are met. Whilst this is not a regulatory issue, this is a high priority in order to provide operation data for future design. Specifically this must include SO2, NOX, CO and particulates. Water vapour, temperature, oxygen concentration, pressure should be recorded if the sample is not dried.	**SEVKAZENERGO**: Continuous monitoring system should be implemented on boiler №10. Will be installed on all boilers by 2013. **PAVLODARENERGO**: Installation works of automatic control device for boiler unit #2 CHP-3 were implemented.
8	**In all CHPs:** Develop an asbestos	Improved management of environmental and health and	Best Practice and EBRD requirement	Consultancy cots / internal	Assess presence of Asbestos by 2010		Installation and on-going usage of asbestos should cease by	**SEVKAZENERGO**:

	management plan aimed at cessation of asbestos usage, removal and disposal. The plan will identify high, medium and low risk asbestos use areas. Stop purchase of asbestos containing products from end of 2009	safety issues. Asbestos is present at the CHP. An asbestos review at the sites is therefore recommended, together with the development of asbestos management plans. The plans will include how risks are to be managed as well as a removal strategy.			Develop a plan by 2010 implement for high risk areas systematically between 2012-20.		2008. A plan for the removal and disposal of asbestos should be developed by 2010 High risk asbestos use area shall be removed by 2020.	Every year basalt-containing materials are replaced by asbestos-containing ones. 494,4 cm^3 of sewed basalt mats were replaced in 2009. 277 cm^3 of basalt mats are planned to be replaced in 2010. **PAVLODARENRGO:** Plans for Pavlodar CHP-3 and CHP-2 and Ekibastuz CHP were developed and published in newspaper "Energetic" #3(2338) dated 13 February, 2009 and #5(2340) dated 20 March, 2009.
9	**In all CHPs:** Determine through analysis whether transformer oils contain PCBs.	Continued use of PCB-containing transformer oil until the end of its useful life is acceptable. However, long term plans for its phase out should be developed.	Best Practice and EBRD requirement	consultancy	2015	Results of analysis		**SEVKAZENERGO**: During the purchase of oils for replacement in transformers, on a mandatory basis a point about the absence of PCBs is controlled in the certificate. Currently polychlorinated biphenyls are not found in transformer oil used by the plant. **PAVLODARENERGO**: The analysis was performed. Transformer oil used by the Company does not contain polychlorinated biphenyls (PCBs).

ESAP specific for particular companies								
No	**Action**	**Environmental Risks / Liability / Benefit**	**Legislative Requirement / Best Practice**	**Investment Needs / Resources (Euros ,000s)**	**Timetable To be completed by the End of Year**	**Target and Evaluation Criteria for Successful Completion**	**Comment**	**Report**
Petropavlovsk PTETS								
1	Install dust abatement on units (in accordance to agreed schedule, namely, on tow boilers each year	Planned implementation of investment program to allow the plant to attain Kazak emissions limits by 2013 and longer term aim to attain international standards for dust emissions.	Kazak national requirements and best practice	CAPEX	Timetable of 2 units upgraded per annum.	Attain Kazak national standards for dust) by 2013		In order to implement the Program to the maximum possible reduction of emissions into the environment in accordance with the requirements of Technical regulation stating "Requirements for emissions into the environment during combustion of fuels in the boilers of power plants", developed a plan for installation of 2nd generation titanium emulsifiers for all boilers by 2013. Plan is being performed on schedule. By 1/01/2010 emulsifiers were installed on boilers of stations №№ 2, 3, 5, 6, 10.
2	Reduce the risk of the contamination of the Beloe Lake with oily water	Develop procedure for sampling and install preventative measure (oil traps) to reduce the risk of accidental oil spillage reaching the Beloe Lake	Best practice	Own resources	2012			Water analysis for lake Beloe is performed twice a month. The absence of oil in the tailrace channel is monitored continuously. Oil catchers are successfully applied on tailrace channel.
PavlodarEnergo CHP								
1	Undertake a review at CHP-2 and CHP-3 of the costs of retrofit abatement solutions (plant and other improvement measures) compared with the complete replacement of primary generation and utilities equipment, as the most cost-effective long term strategy to meet both Kazakhstani and EU environmental standards.	To develop a strategy to meet both Kazakhstan and EU environmental standards in the most cost effective manner.	Best Practice	Internal resources	2010	Publication of report.		The "Additional Investment Project of reconstruction and technical re-equipment of "Pavlodarenergo" JSC for a long-term period 2010-2015" was developed and approved by the Ministry of Power and Mineral Resources of the Republic of Kazakhstan and by state institution "Department of Pavlodar oblast of the Agency of the Republic of Kazakhstan on regulation of natural monopolies"

2	Evaluate further energy efficiency improvement measures. This can be undertaken as part of the BAT assessment and within the BAT assessment budget.	Energy efficiency and lower fuel use per MWh will result in a decrease CO_2 emissions.	Best Practice and EBRD requirement	Internal resources	2010	Publication of GHG reduction plan	The current 12 point investment program is aimed at improving generating efficiency at CHP-3 and thereby reducing specific CO_2 emissions.	Performance of arrangements of the investment program for 2007-2013 will lead to the expected decrease of fuel rate for electric and heat energy production by 0.027 kg/KWh and 3 kg/Gcal, respectively.

Pavlodar Electricity Distribution Company. Petropavlovsk Electricity Distribution Company Pavlodar and Ekibastuz Heat Distribution Company. Petropavlovsk Heat Distribution Company								
1	Prepare a detailed energy efficiency improvement program. This should include 15 years program for pre-isolated pipelines installation, program for installation of appropriate heat meters and the program for thermo-vision photos of the main assets for identification of heat losses. This can be undertaken as a part of the investment program approved by anti-monopoly office.	Energy efficiency and lower fuel use per a square meter will result in this program. Currently each company has above 40,000 GCal/year extraordinary losses along transmission pipelines. Moreover large heat losses are in consumers properties due to poor thermal insulation of houses – the problem lays in financing of such a way of energy saving.	Best Practice and EBRD requirement	Internal resources	2010 – initial actions, preparation of the program, application for acceptance of the program and new rates by local authorities.	Publication of energy efficiency program.		
2	Implementation of environmental training for all employees with less than 3 years of experience in the company.	Due to frequent rotation of the staff it is necessary to provide additional trainings for all employees in scope of their responsibilities in terms of environmental protection, energy efficiency and costumers treatment during energy supply breakdown.	Best Practice and EBRD requirement	150	2009/2011 - See comment	Contract of such trainings, reports from participants and evaluation documentation.		
3	Prepare the detailed inventory of the area with only one side supply, perform the risk assessment for this areas	Due to severe climatic conditions the Companies have to secure power supply. Some areas have only one-sided supply and in some cases through very old power lines (over 20 and 30 years old). Any serious breakdown along such a line may cause significant social harm if it happens during a winter.	Best Practice	40.000 Euro per company	May 2010 – the report should be presented as an annex to the 2009 financial report for the whole company	Publication of the report for the local authorities plus regulatory office. Discussion of the results within management and supervisory board		

4	Verification of the contractors for old transformers and equipment utilization. Develop the certification of the utilization technologies.	Improved management of environmental and H&S issues in the region. Old electric devices require special procedures for utilization and the audited Companies are the largest producers of such wastes in the region. In accordance with Best Practice the way of utilization of these devices should be controlled. The audited plans shall include how risks are to be managed as well as a waste removal strategy.	Best Practice	30	See comment			

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