

ENVIRONMENTAL AND SOCIAL ACTION PLAN OF "PAVLODARENERGO" JSC FOR 2019

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	<p>Publish a corporate EHS report and make it publicly available (including on the internet). The report is to be in compliance with the EBRD's annual reporting requirement, and to include the following information:</p> <ul style="list-style-type: none"> - Key environmental performance indicators (KPIs) - Environmental performance - Greenhouse gas emissions - Legislative issues, including compliance and fines/penalties - - Health and safety performance 	<p>Ensure that best practice is adopted across the organisation and that there is transparency in environmental performance. Reporting of environmental performance to stakeholders.</p>	<p>Best Practice and EBRD requirement</p>	<p>Internal resources</p>	<p>2008 – then annually</p>	<p>Publication of report</p>		<p>The Corporate Report for 2016 was prepared in accordance with established sections and made available on the website of "Central-Asian Electric Power Corporation" JSC at: http://caepco.kz/ru/investoram/fiansovaya-otchetnost.html</p> <p>The Corporate Report for 2018 was prepared in accordance with established sections and made available on the website of "Central-Asian Electric Power Corporation" JSC at: http://caepco.kz/assets/files/go/caepco-annual-report-2018-vol.rus.pdf</p> <p>Report on implementation of the Environmental and Social Action Plan of "PAVLODARENERGO" JSC for 2018 was prepared in accordance with established sections and made available on "PAVLODARENERGO" JSC website at: http://pavlodarenergo.kz/assets/files/ecology/esap_60-za-2018-god-na-rus-yaz.pdf</p> <p>http://pavlodarenergo.kz/assets/files/go/r_1_pe_ru.pdf</p>

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2	Maintain the Management Systems in proper working order, in compliance with the requirements of ISO 14001:2004, ISO 9001:2008, and OHSAS 18001:2007 standards	Ensure that best practice is adopted across the organisation. External certification to ISO14001, ISO 9001:2008, and OHSAS 18001:2007 provides third party assurance of performance and a commitment to continual improvement.	Best Practice and EBRD requirement	Internal resources	2008-2009	Certification to ISO14001:2004, ISO 9001:2008, and OHSAS 18001:2007	EMS implementation is planned at "PAVLODA RENERGO" JSC by the end of 2008.	<p>In 2019, a certification authority ("TÜV Rheinland Kazakhstan" LLP) carried out the first surveillance audits in order to confirm the Company's compliance with the requirements of the update versions of international standards ISO 9001:2015, ISO 14001:2015, and ISO 50001:2011, and the second surveillance audit to confirm the Company's compliance with the requirements of the older version of international standard OHSAS 18001:2007. The conducted audits confirmed that ISO requirements are met. The Company started a planned gradual transition to the new versions of international standards ISO 45001:2018 (replacing OHSAS 18001:2007) and ISO 50001:2018 (replacing ISO 5001:2011).</p> <ul style="list-style-type: none"> - The validity of the certificates "PAVLODARENERGO" JSC possesses is as follows: - ISO 9001:2015 – up to 20.12.2021; - ISO 14001:2015 up to 20.12.2021; - OHSAS 18001-2007 up to 29.10.2020; - ISO 50001:2001 up to 20.12.2021.

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3	Prepare a formal ESIA (Environmental and Social Impact Assessment) for all of the projects at CHP-2 and CHP-3 covered by Investment Programme.	To ensure that the proposed projects minimise 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.	Best Practice and EBRD requirement	80	2008	Publication of ESIA report.	<p>The ESIA will need to include 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 a shareholder will need to be consulted on the ESIA process prior to public consultation.</p>	<p>In 2016, 4 investment projects were developed with receiving conclusions of the state ecological expertise (SEE) for the EIA projects to the following Working drafts:</p> <ul style="list-style-type: none"> - Rehabilitation of the 1st stage of CHP-2 ash pond (SEE conclusion S3-0021/16 dated 04.02.2016); - Dam raising of the 2nd stage of CHP-3 ash pond of "PAVLODARENERGO" JSC (SEE conclusion S01-0040/16 dated 11.08.2016); - Liquidation of "Kuat" and "Zhyly Su" quarries (conclusion KZ12VDC00052526 dated 09.09.2016); - Reconstruction of turbo-unit No.6 of T-100/120-130-3 type with replacement of the generator at CHP-3 (conclusion S01-0039/16 dated 11.08.2016). <p>In 2017, 1 investment project was developed with receiving a conclusion of the state ecological expertise (SEE) for the following Working draft:</p> <ul style="list-style-type: none"> - "Construction of the 3rd stage of CHP-3 ash pond in Pavlodar" (SEE conclusion No.01-0414/17 dated 25.08.2017). <p>In 2018, Project "Rehabilitation on the 2nd stage of CHP-3 ash pond" (SEE conclusion No.119-0223/18 dated 01.11.2018) was developed.</p> <p>In 2019, the following Working drafts were developed:</p>

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								<ul style="list-style-type: none"> - Working draft “The mine map of Beta shale deposit in the North industrial district, the city of Pavlodar” (conclusion of the state ecological expertise (SEE) No.KZ34VDC00077447 dated 28.02.2019); - Working draft “The Recovery Plan for quarrying of Beta deposit (conclusion of the state ecological expertise No.ІІЭ-0077/19 dated 28.03.2019); - the Feasibility Study (FS) for “The extension of CHP-3 of “PAVLODARENERGO” JSC with installation of boiler units No. 7 and No.8 and turbo-unit No.7 at “PAVLODARENERGO” JSC” (conclusion of the state ecological expertise No.КСО-0062/19 dated 07.12.2019); - Working draft “Dam raising of the 2nd stage of CHP-2 ash pond of “PAVLODARENERGO” JSC. Reconstruction.” (conclusion of the state ecological expertise No.S01-0006/20 dated 31.01.2020).

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4	<p>Ensure that all new projects, extensions, plant and associated infrastructure are to be designed to meet both Kazak and EU environmental standards.</p> <p>It includes LCP Directive 2001 and IPPC EU 1996 (including notes LCP BREF BAT (Section – the best used methods).</p>	<p>To ensure that future projects minimise environmental 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.</p>	<p>Best Practice and EBRD requirement</p>	<p>Will vary by project.</p>	<p>On-going</p>			<p>In 2013, “PAVLODARENERGO” JSC completed its work on installation of battery emulsifiers at CHP-3 and CHP-2, which allowed reaching the required level of NOx (up to 570-650 mg/m³) and SOx (up to 2,000 mg/m³) concentration, specified in the Technical Regulations.</p> <p>Actual average annual coal ash (dust), NOx, and SOx concentrations for 2019 reported by “PAVLODARENERGO” JSC based on the monitoring results made 260 mg/m³, 435 mg/m³ and 922 mg/m³, respectively.</p>

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5	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 generating 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 Kazakhstani and EU environmental standards in the most cost effective manner.	Best Practice	Internal resources	2010	Publication of report		<p>The Investment Programme for heat energy production services of "PAVLODARENERGO" JSC for the period from January 1, 2016 up to December 31, 2020 was developed and approved by National Public Agency "The Department of the Committee for regulation of natural monopolies and competition protection of the Ministry of National Economy of the Republic of Kazakhstan".</p> <p>"PAVLODARENERGO" JSC also possesses the approved Investment Programme for CHP-2 and CHP-3 for 2019.</p> <p>The results of implementation of the Investment Programmes will be reflected in the Corporate Report on environmental and social activities of "CAEPCO" JSC for 2019 and will be found at the website of "CAEPCO" JSC.</p>

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6	<p>A programme is to be developed to evaluate the scope for reduction of NOx and sulphur dioxide (SO2) emissions levels comparable with the Large Combustion Plant Directive 2001, namely 400 mg/Nm3 for SO2. Where the SO2 level cannot be met the program shall evaluate the scope for a desulphurization rate of at least 95% with a maximum SO2 discharge of 400 mg/Nm3. The Company will use low NOx burners and optimise for NOx control.</p>	<p>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.</p>	<p>Best Practice and EBRD requirement</p>	<p>Internal resources</p>	<p>Developed plan - 2010 Implementation plan 2010-2020</p>	<p>Publication of report</p>	<p>A BAT Assessment will set out the scope of any improvement works and the programme for implementation. This will include the practicalities of retrofitting equipment.</p>	<p>In 2009, "PAVLODARENERGO" JSC developed the Action plan for the maximum possible decrease of emissions in accordance with the Technical Regulations "Requirements for the emissions produced by combustion of various types of fuels in boilers of combined-heat-and-power plants" for the period of 2009-2013. The expected benefit in the result of implementation of the above mentioned Action plan is the reduction of concentration of nitrogen oxide and sulfur oxide down to 555.1 mg/m3 and 1,380 – 1,520 mg/m3, respectively.</p> <p>In 2013, "PAVLODARENERGO" JSC completed its work on installation of battery emulsifiers at CHP-3 and CHP-2, which allowed reaching figures below the required level of NOx (up to 570-650 mg/m3) and SOx (up to 2000 mg/m3) concentrations, specified in the Technical Regulations.</p> <p>Actual average annual coal dust, NOx, and SOx concentrations for 2019 reported by "PAVLODARENERGO" JSC based on the monitoring results made 260 mg/m3, 435 mg/m3 and 922 mg/m³, respectively.</p> <p>"PAVLODARENERGO" JSC developed a plan for reduction of NOx, SOx and coal ash emissions for the period from 2015 to 2019.</p> <p>In 2019, the following activities were implemented with the purpose to reduce NOx and SOx emissions:</p> <p>1.Replacement and repair of burners with restoration and replacement of heat insulation of the burners of</p>

							boiler units during the period of overhauls at CHP-2 and CHP-3; 2.The activities on setting up combustion and fuel consumption modes of boiler units at CHP-2 and CHP-3 were developed and carried out.	
7	<p>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 300 mg/Nm³ for the plant and then for each stack 100 mg/Nm³ as a long term.</p>	<p>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.</p> <p>Current emission are as follows:</p> <p>Data for CHP-2 gives dust levels in the range 1,014 – 1,712 mg/Nm³. Data for CHP-3 gives dust levels in the range 1,552 – 1,695 mg/Nm³.</p> <p>The Company will upgrade the air abatement equipment, however current technology and fuel will not allow EU standards to be met. Company will need to undertake a Best Available Techniques (BAT) to survey the available technologies that could be applied to the plant.</p>	Best Practice and EBRD requirement	Internal resources, CAPEX Approx. 15-20 mln	<p>Plan by 2008</p> <p>2010 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. Terms of reference (ToR) for this study to be agreed with the lender (Bank).</p> <p>Attain 300 mg/Nm³ average emissions from CHP by 2015 that will be operational post 2015</p> <p>As a long term aim attain 50-100 mg/Nm³ average on the stack or min 99.8 % efficiency of dust removal.</p>	<p>.Provision of plant and then BAT Study to the lenders. Publication of information on planned investments.</p> <p>Achieving appropriate emission levels.</p>	<p>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.</p>	<p>With a view of Action Plan realisation for the maximum possible decrease of emissions, and according to Technical Regulations “Requirements for the emissions produced by the combustion of various types of fuels in boilers of combined-heat-and-power plants”, the reconstruction of dust extraction plants on all boiler units of CHP-2 and CHP-3 has been implemented.</p> <p>The result achieved in 2019 is the Company’s ability to maintain the efficiency of ash collection in power-generating boiler units at the design level of dust extraction plants equal to 99.51%.</p> <p>A Plan for NO_x, SO_x and dust emissions reduction for the period from 2015 to 2019 was developed.</p> <p>In 2019, the following activities were implemented with the purpose to reduce ash and coal emissions:</p> <ol style="list-style-type: none"> 1. Repair and replacement of the worn-out components of the dust extraction plants of the titanium battery emulsifiers of II generation named after Yu. Panarin of boiler units at CHP-2 and CHP-3; 2. Efficiency tests of dust extraction plants operation at CHP-2 and CHP-3. Based on the trial results, the efficiency of the dust extraction plants remained at the same design level.

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8	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 tend to decrease CO2 emissions.	Best Practice and EBRD requirement	Internal resources	2010	Publication of GHG reduction plan	<p>The current 12 point Investment Programmeme is aimed at improving generating efficiency at CHP-3 and thereby reducing specific CO2 emissions.</p>	<p>Performance of arrangements of the Investment Programme for 2007-2013 and the Additional Investment Programme of reconstruction and technical re-equipment of "PAVLODARENERGO" JSC for a long-term period of 2010-2015 brought about the expected decrease in specific fuel consumption for electric and heat energy production by 0.027 kg/kWh and 3 kg/Gcal, respectively.</p> <p>In 2019, the specific fuel consumption for electric energy busbar output decreased by 0.0183 kg/kWh, as compared to 2006. The specific fuel consumption for heat energy output decreased by 6.25 kg/Gcal, as compared to 2006.</p> <p>The reduction of specific fuel consumption rates comes from the changes in the configuration of CHP-3 equipment involved into operation (putting into operation the more advanced equipment of boilers No.4 and No.6, turbines No.1, No.2, No.4 and No.5) and the increased heat demand (in steam).</p>

9	<p>Implementation of continuous emission monitoring systems (CEMS) for all stack emissions.</p>	<p>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.</p>	<p>Best Practice and EBRD requirement</p>	<p>200</p>	<p>See comment</p>	<p>Commissioning of CEMS at all appropriate sources</p>	<p>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 of "PAVLODARENERGO" JSC should be fitted with CEMS no later than 2015.</p>	<p>In December 2013, all the boiler units at CHP-2 and CHP-3 were equipped with the exhaust gas continuous monitoring system, and the equipment adjustment was performed. The monitoring of exhaust gas emissions is carried out in real-time mode with digital recording. Monitoring data are available for CHP operating personnel and the relevant departments of "PAVLODARENERGO" JSC, which makes it possible to maintain active control over the emissions on a continuous basis. In 2019, exhaust gas emissions are controlled in accordance with the established continuous monitoring system. In 2019, a pre-project inspection was carried out with the development of the Terms of Reference for the project design of an automated monitoring system (AMS) for environmental emissions at CHP-2 and CHP-3 and at the boundaries of the sanitary protection zones of CHP-2 and CHP-3 of "PAVLODARENERGO" JSC.</p>
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10	<p>Improve the physical condition of the mazut storage areas at CHP-2 and CHP-3.</p>	<p>Risks are presented to land, ground and surface waters from chemical storage areas at both sites, in particular mazut storage. Improved storage of this material will minimise risks.</p>	<p>Best Practice and EBRD requirement</p>	<p>200</p>	<p>2012</p>	<p>Publication of improvement plan</p>		<p>In 2009, "PAVLODARENERGO" JSC developed Plans for improvement of the physical condition of the mazut storage areas at CHP-2 and CHP-3 for the period of 2010-2012 and had them published in mass media ("Energetic" newspaper in editions No.3, No.5 and No.11). In the following years, including 2016, the Company continues work on improvement of the physical condition of the mazut storage areas at CHPs. The Company regularly carries out condition surveys of its equipment and buildings and constructions of mazut pump stations. According to the results of such surveys, the appropriate measures (repairs, reservoir cleaning, coating of tanks, restoration of tank bunding, etc.) are taken. Implementation of the Plans resulted in a reliable maintenance of the equipment and mazut-handling facilities, a timely transportation of mazut via pipelines for boiler firing, and a stable temperature of mazut circulating through the pipelines of the rack.</p>
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11	Develop an asbestos management plan aimed at cessation of asbestos usage, removal and disposal.	Improved management of environmental and health and safety issues. Asbestos is present in the boiler house of both CHP-2 and CHP-3. 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.	Best Practice and EBRD requirement	200	See comment		<p>Installation and on-going usage of asbestos should cease by 2008.</p> <p>A plan for the removal and disposal of asbestos should be developed by 2010.</p> <p>All asbestos shall be removed from both CHP-2 and CHP-3 by 2015</p>	<p>The Company developed Plans aimed at cessation of asbestos usage on the equipment of CHP-2, CHP-3, and Ekibastuz CHP.</p> <p>Since 2010, the Company has not purchased any asbestos-containing materials. All the asbestos-containing materials possessed by the Company are classified as industrial and construction materials, according to the Wastes Classifier of the Ministry of Environmental Protection of the Republic of Kazakhstan, and are subject to packing in polymeric bags with their further disposal to industrial waste landfills. The Programs (scheduled plans) were developed for each CHP aimed at the replacement of asbestos-perlite items of the equipment by basalt ones with further disposal of asbestos-perlite items from the territory of CHPs.</p> <p>In 2019, works on replacement of asbestos-perlite items by basalt ones were continued according to the Plan aimed at cessation of asbestos usage on the equipment of CHP-2 and CHP-3.</p>

12	Determine through analysis whether transformer oils at CHP-2 and CHP-3 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	50	2015	Results of analysis	<p>In 2013, an accredited laboratory executed laboratory testing of the samples taken from the oil-filled equipment to determine whether oils contain PCBs. The results of laboratory tests revealed that PCBs content in all the samples taken from the oil-filled equipment of "PAVLODARENERGO" JSC is less than 50 mg/kg.</p> <p>In order to prevent acquisition of oil (oil-filled equipment) containing PCBs by CHPs, the Company controls the quality of oil by requiring a document (a certificate) from suppliers, which shall prove the absence of PCBs in each and every batch of the supplied products (equipment).</p> <p>Eventually, in case of purchasing of industrial oils without a certificate proving the absence of PCBs, it is planned that the responsible department of "PAVLODARENERGO" JSC (Logistics and Maintenance Management) shall carry out oil sampling and send samples for testing before using such oils.</p> <p>In 2019, the suppliers of purchased oils provided the certificates proving the absence of PCBs.</p>
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REPORT
on work performed by “PAVLODARENERGO” JSC in compliance with
the requirements specified in Article 5.14(c) of Loan Agreement between
JOINT-STOCK COMPANY “PAVLODARENERGO” and
EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT
dated 29 November 2007

Article 1. Information on ESDD

“PAVLODARENERGO” JSC operates in accordance with the current legislation of the Republic of Kazakhstan on environmental, health and safety issues.

In 2019, there was 1 (one) inspection at “PAVLODARENERGO” JSC carried out by Republican State Enterprise “Environmental Department of Pavlodar oblast” with the purpose of preventive verification and supervision, which included site visiting (the subjects (objects) of verification and supervision) in respect of the Company’s compliance with the requirements of Environmental Law of the Republic of Kazakhstan. 4 (four) improvement notices were issued. All the notices were implemented in full scope and in a timely manner.

Article 3. Information on Environmental and Social Reports

Information on the reports on Environmental Matters

No.	Type of information	The organization or the official the information is to be furnished to	The deadline
1.	Form No.2-TII air (semiannual, annual) abridgement	Department for Statistics of Pavlodar oblast	Annually, before the 10 th of April
2.	Form No.4-OC on current expenditures for environmental protection (annual)	Department for Statistics of Pavlodar oblast	Annually, before the 15 th of April
3.	Form No.2-TII utility water (annual)	State Administration “Irtysk Inspection for Water Basin Resource Management and Conservation of the Committee for Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan”	Annually, before the 10 th of January
4.	Report on hazardous waste inventory (annual) with a breakdown by CHPs	Environmental Department of Pavlodar oblast	Annually, before the 1 st of March
5.	Report on implementation of environmental protection activities	Environmental Department of Pavlodar oblast	Quarterly, before the 10 th day of the month following the reported quarter
6.	Report on Industrial Environmental Control Programme of “PAVLODARENERGO” JSC	Environmental Department of Pavlodar oblast	Annually, once a month, once a year, within 10 working days following the reporting period
7.	Report on GHG inventory	Committee for environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan, the city of Nur-Sultan.	Annually, before the 1 st of April

Information on the reports on Safety, Health and Labour protection

No.	Type of information (reports) to be furnished	Furnished to	Periodicity of furnishing of information (reports)
1.	Report on injures 7-TPZ (annual)	Department for Statistics of Pavlodar oblast	Annually, before the 25 th of February
2.	Information on the results of production control conducted at "PAVLODARENERGO" JSC	A local subdivision of the administration of the state authorities in the field of sanitary and epidemiological safety of the population	Semiannually, before the 5 th of July and the 5 th of January

Note: All the reports on environmental activities, health and safety for 2019 and as of the end of the reporting year were furnished to the competent authorities within the prescribed time limits and in accordance with the above-mentioned lists.

Article 5. Information on amendments to legislative and regulatory legal acts of the Republic of Kazakhstan

The list of statutory legal acts that are used in the activity of the Company's Environmental Protection Management of "PAVLODARENERGO" JSC

No.	Name of document	The code of statutory document	The date of its approval (revision)
1	Environmental Management Systems. Requirements with guidance for use	MC ISO 14001:2015	(2015) 2018
2	Quality Management Systems. Requirements with guidance for use.	MC ISO 9001:2015	(2015) 2018
3	Occupational Health and Safety Management System.	MC ISO 18001:2007 MC ISO 45001:2018	2008 2018
4	Energy Management System. Requirements with guidance for use.	MC ISO 50001:2011 MC ISO 50001:2018	2011 2018
5	Constitution of the Republic of Kazakhstan	-	05.09.1995 (23.03.2019)
6	Environmental Code	212-III	09.01.2007 (26.12.2019)
7	Water Code	481-II	09.07.2003 (28.10.2019)
8	Land Code	442-II	20.06.2003 (26.12.2019)
9	Labour Code of the Republic of Kazakhstan	No.414-V 3PK (Law of the Republic of Kazakhstan)	23.11.2015 (01.01.2020)
10	Commercial Code of the Republic of Kazakhstan	375-V	29.10.2015 (21.01.2019)

11	Code of the Republic of Kazakhstan “On Taxes and other Obligatory Payments to the Budget”	120-IV	25.12.2017 (10.01.2020)
12	Law of the Republic of Kazakhstan “On Subsoil and Subsoil Use”	125-IV	25.12.2017 (30.12.2019)
13	Law of the Republic of Kazakhstan “On Obligatory Environmental Insurance”	93-III	01.01.2006 (01.01.2020)
14	Law of the Republic of Kazakhstan “On Civil Protection”	188-V	11.04.2014 (07.01.2020)
15	Law of the Republic of Kazakhstan “On Electric Power Industry”	No.588-II	09.07.2004 (11.01.2020)
16	Law of the Republic of Kazakhstan “On Railway Transportation”	266-II	08.12.2001 (19.04.2019)
17	Law of the Republic of Kazakhstan “On Safety of Chemical Products”	302-III	21.07.2007 (29.10.2015)
18	Law of the Republic of Kazakhstan “On Architectural, Town-planning and Construction Activity in the Republic of Kazakhstan”	242-II	16.07.2001 (25.12.2017)
19	A Hazardous Waste Descriptor Form	128-П	30.04.2007 (27.12.2016)
20	The Guidelines on assessment of the level of environmental pollution with toxic production and consumption wastes	ПНД 03.3.0.4.01-96 (Guiding Normative Document)	1996 (1997)
21	The order of rationing of generation and allocation of waste products	ПНД 03.1.0.3.01-96 (Guiding Normative Document)	1996 (29.08.1997)
22	National Regulations in the field of architecture, urban development and construction INTERNAL WATER SUPPLY AND SEWERAGE SYSTEM OF THE BUILDINGS	Construction Standards CH PK 4.01-01-2011	(11.10.2017)
23	State Standard. Secondary ferrous metals. General technical requirements	ГОСТ 2787-75 (GOST)	1975 (1977)
24	Sanitary Standards of working with mercury, its compounds and mercury-filled devices	CH 1.10.083-94	1994
25	The Rules for organization of public hearings	135-П	07.05.2007 (08.09.2017)
26	The Methods for determination of environmental emission limit values	110-П	11.07.2012 (17.06.2016)
27	The Rules for organization of liquidation landfill funds	125	13.11.2014
28	The Technical Regulations “Requirements for Air Emissions during the Process of Combustion of Various Types of Fuels in Boilers of CHPs”	1232	14.12.2007 (21.07.2010)
29	Instructions on completion of a statistical data form of the national-wide statistical survey “The Report on expenditures for	Exhibit 17 to Order No.5	13.12.2018

	environmental protection” (code 151112212, index 4-OC, annual periodicity)		
30	The Rules for primary water resource assessment	19/1-274	30.03.2015 (27.12.2018)
31	The Rules for usage of water supply systems and water disposal systems of residential areas	163	28.02.2015
32	On approval of the risks assessment criteria and checklists in the field of environmental protection, restoration and use of natural resources (under the joint order of the Ministry of Energy of the Republic of Kazakhstan and acting Minister of Economy of the Republic of Kazakhstan)	721 835	15.12.2015 30.12.2015 (26.11.2018)
33	Instructions on implementation of the Environmental Impact Assessment of the planned business and other activities	204-П	28.06.2007 (17.06.2016)
34	The Sanitary Rules “Sanitary and epidemiological requirements to water sources and water supply points used for domestic water consumption and drinking, household water supply, places of community water supply, and safety of water bodies”	209	16.03.2015
35	The Rules for development of the waste management programme	146	25.11.2014
36	On approval of Consumption Limits (allowances) of ozone-depleting substances for the period from 2016 to 2019	No. 35	04.02.2016
37	On approval of the Form of an installation passport	No. 122-П	15.05.2013 (03.08.2018)
38	The Rules for keeping the State Register of carbon units	147-П No. 496	10.05.2012 (01.01.2018)
39	A reporting form on GHG inventory	502	28.07.2015 (02.06.2016)
40	The Rules for monitoring, accounting, and reporting on carbon units of GHG emissions for trading purposes	157-П	14.05.2012 17.11.2016
41	The Rules for conversion of units of project mechanisms into allowance units in the field of GHG emissions regulation and occlusion	148-П	10.05.2012 (17.11.2016)
42	The Rules for mutual acknowledgement of allowance units and other carbon units based on the international agreements of the Republic of Kazakhstan	153-П	11.05.2012 (11.11.2016)
43	The Rules for preparation, consideration and approval, accounting, reporting and	150-П	11.05.2012 (17.11.2016)

	monitoring of internal projects on reduction of GHG emissions		
44	The Rules for liquidation and conservation of subsoil use objects	200 155	27.02.2015
45	The Rules for GHG allowance allocation and creation of reserves of allowances in the assigned amount under the National Plan of GHG allowance allocation	370	15.06.2017
46	The Rules for monitoring and control of GHG emission inventory	221	19.03.2015 (17.11.2016)
47	The Rules for GHG emissions and carbon units trading	151-П	18.09.2012 (12.07.2016)
48	The Rules for review, approval, and implementation of projects aimed at GHG emissions reduction and GHG occlusion	841	27.06.2012 (29.05.2017)
49	The Rules for implementation of project-based mechanisms in the field of GHG emission regulation and occlusion	76	12.02.2015 (since 17.11.2016)
50	The Rules for inclusion of nature management conditions into environmental emissions permits	112-П	16.04.2007 (21.06.2016)
51	A document form for issuance of environmental emission permits and the rules for their completion	115	20.02.2015 (22.08.2016)
52	Instructions on completion of a statistical data form of the national-wide statistical survey "The Report on atmospheric air protection" (code 151112187, index 2-TII air, annual periodicity)	Exhibit 16 to Order No.5	13.12.2018
53	A form of the report on wastes inventory and the instructions on completing the form of report on waste inventory	352	29.07.2016
54	The Rules for development of internal projects on GHG emissions reduction and the List of fields and economic sectors to which they can be applied	156-П	14.05.2012 (17.11.2016)
55	The Rules for standardization of measurements and accounting of GHG emissions	144-П	10.05.2012 (31.05.2016)
56	The Rules for handling resistant organic pollutants and wastes containing such resistant organic pollutants	40-П	24.02.2012
57	Dangerous goods. Testing methods	ГОСТ 19433.2-2010 (GOST)	2014
58	Dangerous goods. Labelling	ГОСТ 19433.3-2010 (GOST)	2013

59	The Rules for staff relations at power organizations in the Republic of Kazakhstan	234	26.03.2015 (15.07.2016)
60	Grid code (the rules for operation of power plants and networks)	247	30.03.2015
61	The Rules for keeping the National Registry of wastes and transport of air pollution	241	10.06.2016
62	Instructions on completion of a statistical data form of the national-wide statistical survey "The Report on water intake, use and discharge (code 7791204, index 2-III utility water, annual periodicity)	94	25.12.2014 (11.01.2018)
63	Order an approval of forms of the environmental action plan and the report on its implementation	252	17.06.2016
64	Hygienic ambient air regulations in urban and rural settlement	168	28.02.2015
65	Methods for determination of velocity and flowrate of gas-and-dust streams from stationary sources of pollution	ГОСТ 17.2.4.06-90 (GOST)	1991
66	The Rules for GHG allowance allocation, alteration and redemption	292	28.06.2016 (03.08.2018)
67	The List of GHG emission specific ratios	222	28.06.2017
68	The Rules for GHG allowance allocation and creation of reserves of allowances in the assigned amount under the National Plan of GHG allowance allocation	370	15.06.2017

The Policy of the integrated management system (the Quality Management System, the Environmental Management System, the Occupational Health and Safety Management System, and the Energy Management System) in edition No.2 has come into force, starting from August 7, 2017, by Order No.2215 dated 08.08.2017. According to the advisory opinion of an external auditor for international standard ISO 5001, this Policy was expanded with the information regarding procurement of goods and services that enhance the Company's energy efficiency integrally and then reissued as edition No.3 dated 24.09.2018, which was enforced by the Minutes of the extraordinary meeting of the Coordination group for the integrated management system of "PAVLODARENERGO" JSC dated September 19, 2018.

In 2019, a certification authority ("TÜV Rheinland Kazakhstan" LLP) carried out the first surveillance audits in order to confirm the Company's compliance with the requirements of the update versions of international standards ISO 9001:2015, ISO 14001:2015 and ISO 50001:2011, and the second surveillance audit to confirm the Company's compliance with the requirements of the older version of international standard OHSAS 18001:2007. The Company is carrying out a planned gradual transition to the new versions of international standards ISO 45001:2018 (replacing OHSAS 18001:2007) and ISO 50001:2018 (replacing ISO 5001:2011).

Environmental emission permits for CHP-2 and CHP-3 of “PAVLODARENERGO” JSC:

In 2019, “PAVLODARENERGO” JSC obtained the following Permits: Environmental Emission Permit for pollutant emissions No.KZ67VCZ00469926 valid during the period from October 7, 2019 up to December 31, 2028, and Environmental Emission Permit for disposal of industrial and consumer waste No.KZ39VCZ00485271 valid during the period from October 24, 2019 up to December 31, 2028 for CHP-2; Environmental Emission Permit for pollutant emissions No. KZ76RCP00082386 valid during the period from October 24, 2019 up to December 31, 2028, and Environmental Emission Permit for disposal of industrial and consumer waste No.KZ66VCZ00485270 valid during the period from October 24, 2019 up to December 31, 2028 for CHP-3. Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan” issued all the above-mentioned Permits.

**General Director of
“PAVLODARENERGO” JSC**



O. Perfilov

Report
on compliance with ecological legislation of the
Republic of Kazakhstan
of “PAVLODARENERGO” JSC in 2019

Environmental protection issues are among the most important priority tasks for the strategic development of the Company. Environmental pollution prevention is a determinant for all the decisions made in the course of the Company’s operating activities during generation, transmission and distribution of electric and heat energy. When introducing new technologies, the Company shall assess the level of their environmental impact and the efficiency of energy and natural resources use.

Main environmental indicators

Environmental emissions are carried out based on environmental emission permits obtained by the Company.

Reported data on emissions of “PAVLODARENERGO” JSC in 2019, separately for each CHP:
tons

Emissions of pollutants into the atmospheric air	CHP-2		CHP-3		“PAVLODARENERGO”, total	
	Limit	Actual	Limit	Actual	Actual	Limit
Total, including:	10,150	7,253	44,551	28,634	54,701	35,887
Coal ash	1,468	1,145	7,554	5,115	9,022	6,260
Nitrogen dioxide	1,876	1,247	7,962	6,071	9,838	7,318
Nitrogen oxide	305	203	1,294	987	1,599	1,190
Sulfur dioxide	6,162	4,547	26,118	16,026	32,280	20,573
Carbon oxide	336	110	1,532	430	1,868	540
Other	3	1	91	5	94	6

Reported data on the volume of ash-and-slag waste generation, permitted and actual for 2019, separately for each structural subdivision of “PAVLODARENERGO” JSC:

Waste	CHP-2		CHP-3		“PE” JSC, total	
	Limit	Actual	Limit	Actual	Limit	Actual
Ash and slag	271,657	248,502	1,179,432	1,001,226	1,451,089	1,249,728

In 2019, removal of soil domestic waste and its sweepings from hard surfaces of the Company’s premises was carried out to the waste landfills in the cities of Pavlodar. The removal of industrial waste from the Company’s production facilities was carried out to the existing industrial waste landfills under the concluded agreements.

Mercury-containing lamps were accepted for demercurization by a specialized organization under the concluded agreement.

Activities on compliance with environmental requirements

In 2019, the Company accomplished a number of activities to the amount of KZT 1,292,186.019 thousand, out of which major activities are as follows:

- construction of the 3rd stage of CHP-3 ash pond; the costs made KZT 624,221.241 thousand;
- construction (building up) of the 1st stage of CHP-3 ash pond; the costs made KZT 89,010.960 thousand;
- repair of the pipelines, shutoff and control valves of the process and service and drinking water systems at CHP-2 and CHP-3; the costs made KZT 5,346.040 thousand;
- restoration of heat insulation and covering of emulsifiers and gas boiler passes; repair of dust extraction plants; works on keeping the efficiency of dust extraction plants at the design level at CHP-2 and CHP-3; the cost made KZT 21,591.245 thousand;
- GHG and ozone-depleting substance emission inventory, development of installation certificates, monitoring programs and GHG emission reduction programs for CHP-2 and CHP-3; the cost made KZT 1,120 thousand;
- The development of the project and working documentation for boiler units No.7 and No.8 at CHP-3 in compliance with the Best Available Technologies and with the best dust extraction plant system; the cost made KZT 124,262.19 thousand;
- repair of ash discharge pipelines and a coal slurry pipeline at CHP-3 and CHP-2; the cost made KZT 4,012.336 thousand;
- implementation of the current repair works to ensure the performance mode of the main equipment in compliance with the requirements of the Technical Regulations of the Republic of Kazakhstan (No.1232 dated 14.12.2007) at CHP-2 and CHP-3; the costs made KZT 376,344.697 thousand;
- implementation of industrial environmental monitoring at CHP-2 and CHP-3; the cost made KZT 2,243.415 thousand.

Legislative requirements

“PAVLODARENERGO” JSC carries out its activities in compliance with the current legislation of the Republic of Kazakhstan on environment, health and safety issues. In terms of approval documents, “PAVLODARENERGO” JSC relies upon the regulatory documents establishing maximum permissible limits with regard to environmental impact agreed with the authorized bodies of the Republic of Kazakhstan.

The established Regulations for the environmental activities of the Company enterprises are the following:

- Environmental Emission Permit for pollutant emissions No.KZ67VCZ00469926 valid during the period from October 7, 2019 up to December 31, 2028 issued to CHP-2 by Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
- Environmental Emission Permit for disposal of industrial and consumer waste No.KZ39VCZ00485271 valid during the period from October 24, 2019 up to December 31, 2028 issued to CHP-2 by Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
- Environmental Emission Permit for pollutant emissions No. KZ76RCP00082386 valid during the period from October 24, 2019 up to December 31, 2028 issued to CHP-3 by Republican

- State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
- Environmental Emission Permit for disposal of industrial and consumer waste No.KZ66VCZ00485270 valid during the period from October 24, 2019 up to December 31, 2028 issued to CHP-3 by Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
 - Draft regulations for maximum permissible emissions (MPE) for CHP-2 for the period from October 7, 2019 up to December 31, 2028 agreed with Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
 - Draft regulations for maximum permissible emissions (MPE) for CHP-3 for the period from October 24, 2019 up to December 31, 2028 agreed with Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
 - Draft regulations for production and consumption waste disposal for CHP-2 for the period from October 24, 2019 up to December 31, 2028 agreed with Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
 - Draft regulations for production and consumption waste disposal for CHP-3 for the period from October 24, 2019 up to December 31, 2028 agreed with Republican State Enterprise “The Committee of environmental regulation and control of the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan”;
 - Individual water consumption and wastewater standards per unit during the period 2016-2020 for CHP-2 agreed with the Committee for Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan;
 - Individual water consumption and wastewater standards per unit during the period 2016-2020 for CHP-3 agreed with the Committee for Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan;
 - Environmental Protection Plan for CHP-2 of “PAVLODARENERGO” JSC for the period of 2019-2028 agreed with the Committee for Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan;
 - Environmental Protection Plan for CHP-3 of “PAVLODARENERGO” JSC for the period of 2019-2028 agreed with the Committee for Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan;
 - The industrial environmental monitoring program for CHP-2 of “PAVLODARENERGO” JSC for the period 2019-2028;
 - The industrial environmental monitoring program for CHP-3 of “PAVLODARENERGO” JSC for the period 2019-2028;

All the projects developed and being implemented shall undergo an obligatory state ecological expertise. The Company obtained positive conclusions of the state ecological expertise in respect of the Company’s Environmental Impact Assessment for the following projects:

- “Installation of turbo unit No.1 of PT-65/75-130/13 type at CHP-3 «PAVLODARENERGO” JSC” (conclusion No. 3-2-12/5173 dated 22.10.2010);
- “Construction of the 2nd stage of CHP-2 ash pond of “PAVLODARENERGO” JSC” (conclusion No.3-2-12/464 dated 03.02.2012);
- “The construction of three-section block-modular fan cooling tower at the existing pool of CHP-2 of “PAVLODARENERGO” JSC” (conclusion No.3-2-12/3495 dated 07.12.2012);
- “Reconstruction of the dust extraction plant of boiler No.3 of BKZ-160-100F (M) type CHP-2 of “PAVLODARENERGO” JSC including installation of battery emulsifiers of II generation” (conclusion No.3-2-12/3332 dated 26.11.2012);

- Reconstruction of the dust extraction plant of boiler No.2 of BKZ-420-240 type at CHP-3 of “PAVLODARENERGO” JSC including installation of battery emulsifiers of II generation” (conclusion No.3-2-12/3330 dated 26.11.2012);
- “Reconstruction of the dust extraction plant of boiler No.1 of BKZ-160-100(M) type at CHP-2 of “PAVLODARENERGO” JSC including installation of battery emulsifiers of II generation” (conclusion No.KZ12VCY00002196 dated 23.12.2013);
- Updating of working draft “Reconstruction of earthworks of CHP-2 ash pond (ash-disposal area)” (conclusion No.KZ14VCY00003906 dated 12.03.2014);
- “Reconstruction of turbo-unit No.5 of T-100-130 type with replacement of the generator at CHP-3” (conclusion No.KZ31VCY00014561 dated 31.07.2014);
- Conclusion on working draft “The server room” (conclusion No.KZ06VCY00030906 dated 12.12.2014);
- Conclusion on EIA to working draft “Mounting of cooling tower No.5 at CHP-3” (conclusion No. KZ90VCY00016409 dated 24.10.2014);
- Rehabilitation of the 1st stage of CHP-3 ash pond of “PAVLODARENERGO” JSC (conclusion No.KZ65VDC00030038 dated 28.11.2014);
- Construction of a new main control board at CHP-3 (conclusion No.KZ74VDC00033756 dated 24.02.2015);
- Installation of turbo-unit No.2 of PT-65/75-130-13 type at CHP-3 (conclusion No.KZ34VCY00019260 dated 17.03.2015);
- Mounting of smokestack No.2 at CHP-3 (conclusion No.KZ86VCY00019488 dated 03.04.2015);
- Reconstruction of household sewage facilities from the sewage collector of “Pavlodar cardboard paper mill” JSC up to the pumping station of CHP-3 (conclusion No.KZ45VDC00035054 dated 08.04.2015);
- Replacement of an electrolysis unit of SEU-4M model which has reached the end of its service life by an upgraded one, with a control board and storage receivers for CHP-2 (conclusion No.KZ22VDC00035177 dated 13.04.2015);
- Reconstruction of ash-pump houses No.1 and No.2 at CHP-2 (conclusion No.KZ91VDC00035196 dated 13.04.2015r);
- Reconstruction of water treatment plant with replacement of ø500 pipelines for raw water supply (2 lines) in the chemical shop, with installation of a new raw water clarifier at CHP-3 of “PAVLODARENERGO” JSC (conclusionNo.KZ16VDC00035188 dated 13.04.2015);
- Reconstruction of an ash-pump house at CHP-2 (conclusion No.KZ53VDC00035201 dated 13.04.2015);
- Reconstruction of earth water-retaining structures of CHP-3 ash disposal area (ash pond) (conclusion KZ71VCY00019952 dated 06.05.2015);
- Reconstruction of turbo unit No.4 of T-100/120-130-3 type with replacement of the generator at CHP-3 (conclusion S01-0018/15 dated 11.09.2015);
- Rehabilitation of “Kuat” and “Zhyly Su” quarries (conclusion KZ65VDC00045073 dated 06.01.2016);
- EIA to working draft (WD) “Rehabilitation of the 1st stage of CHP-2 ash pond (conclusion S3-0021/16 dated 04.02.2016);
- Prospecting and evaluation shale works in ALPHA sector of the North industrial district in Pavlodar (conclusion KZ73VDC00048518 dated 05.05.2016);
- Dam raising of the 2nd stage of CHP-3 ash pond of “PAVLODARENERGO” JSC (SEE conclusion S01-0040/16 dated 11.08.2016);
- Liquidation of “Kuat” and “Zhyly Su” quarries (conclusion KZ12VDC00052526 dated 09.09.2016);
- Reconstruction of turbo-unit No.6 of T-100/120-130-3 type with replacement of the generator at CHP-3 (conclusion S01-0039/16 dated 11.08.2016);
- “Pavlodar CHP-3. Construction of a site for temporary storage of metal scrap” (SEE conclusion No.S01-0049/16 dated 03.11.2016);

- Project “The feasibility of a projected (preliminary) sanitary protection zone (SPZ) for CHP-2 of “PAVLODARENERGO” JSC with ash disposal areas (sanitary-epidemiological conclusion No.S.01.X.KZ04VBS00052248 dated 12.12.2016);
- Project “The feasibility of a projected (preliminary) sanitary protection zone (SPZ) for CHP-3 of “PAVLODARENERGO” JSC with ash disposal areas (sanitary-epidemiological conclusion No.S.01.X.KZ72VBS00051897 dated 08.12.2016).
- Project “Residential development with a built-on 3-storey corner insert in Usolskiy micro district No.1A in Pavlodar” (SE conclusion No.16-0189/17 dated 16.08.2017);
- Project “Construction of the 3rd stage of CHP-3 ash pond in Pavlodar” (SE conclusion No.01-0414/17 dated 25.08.2017);
- Project “Prospecting and evaluation shale works in Beta sector of the North industrial district in Pavlodar (SEE conclusion No.KZ61VDC00067358 dated 28.12.2017);
- Project “Prospecting and evaluation shale works in Beta sector of the North industrial district for 2017” (sanitary-epidemiological conclusion No.S.01.X.KZ09VBS00097457 dated 10.01.2018);
- Project “Construction (mounting) of smokestack No.2 at CHP-3” (conclusion No.KZ12VDD00089693 dated 22.02.2018);
- Project “Construction (reconstruction) of household sewage facilities from the sewage collector of “KazEcoProm” LLP up to the pumping station of CHP-3 (conclusion No.KZ21VDD00089822 dated 26.02.2018);
- Project “The feasibility of the established (final) sanitary protection zone for CHP-2 of “PAVLODARENERGO” JSC with ash disposal areas (sanitary-epidemiological conclusion No.S.01.X.KZ13VBS00105339 dated 03.04.2018);
- Project “The feasibility of the established (final) sanitary protection zone for CHP-3 of “PAVLODARENERGO” JSC with ash disposal areas (sanitary-epidemiological conclusion No.S.01.X.KZ30VBS00105324 dated 03.04.2018);
- Project “Organization of a sanitary protection zone at Beta shale deposit in the North industrial district in Pavlodar (SEE conclusion No.S.01.X.KZ81VBS00111099 dated 06.06.2018);
- Project “Construction (building up) of the 1st stage of CHP-3 ash pond” (conclusion No.KZ72VDD00094627 dated 01.06.2018);
- Project “Commercial field development of Beta shale deposit in the North industrial district in Pavlodar (SEE conclusion No.KZ88VDC00071528 dated 05.07.2018);
- Project “Rehabilitation of the 2nd stage of CHP-3 ash pond” (SE conclusion No. ЦЭ-0223/18 dated 01.11.2018);
- - Working draft “The mine map of Beta shale deposit in the Northern Industrial District, the city of Pavlodar” (conclusion of the state ecological expertise (SEE) No.KZ34VDC00077447 dated 28.02.2019);
- - Working draft “The Recovery Plan for quarrying of Beta shale deposit (conclusion of the state ecological expertise No.ЦЭ-0077/19 dated 28.03.2019);
- - the Feasibility Study (FS) for “The extension of CHP-3 of “PAVLODARENERGO” JSC with installation of boiler units No. 7 and No.8 and turbo-unit No.7 at “PAVLODARENERGO”JSC” (conclusion of the state ecological expertise No.ҚСО-0062/19 dated 07.12.2019);
- - Working draft “Dam raising of the 2nd stage of CHP-2 ash pond of “PAVLODARENERGO” JSC. Reconstruction.” (conclusion of the state ecological expertise No.S01-0006/20 dated 31.01.2020).

General Director of
“PAVLODARENERGO” JSC



O. Perfilov