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# **ENVIRONMENTAL REVIEW CHECKLIST FOR IDENTIFYING POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ACTIVITIES AND PROCESSES**

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## **Reconstruction of a Gas Boiler House and Organization of a Biofuel Supply System in Myrhorod, Poltava Oblast**

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Implemented under:  
*Local Alternative Energy Solutions in Myrhorod (LAESM) Project*

DCN: IDEA ODP SIEE\_LAESM\_ND

Prepared by: Olena Chernikova, MDI Environmental Consultant

## ENVIRONMENTAL REVIEW CHECKLIST FOR IDENTIFYING POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ACTIVITIES AND PROCESSES

The Environmental Review Checklist for Identifying Potential Environmental Impacts of Project Activities and Processes (ERC) is intended for use mainly by implementing partners to: assess activity-specific baseline conditions, including applicable environmental requirements; identify potential adverse environmental effects associated with planned activity(s) and processes; and develop environmental mitigation and monitoring plans (EMMPs) that can effectively avoid or adequately minimize the identified effects.

### Activity and Site Information

<b>Project Name: (as stated in the triggering IEE)</b>	<b>Local Alternative Energy Solutions in Myrhorod (LAESM)</b>
<b>Mission/Country:</b>	<b>Ukraine</b>
<b>DCN of Triggering IEE:</b>	<b>IDEA ODP SIEE_LAESM_ND</b>
<b>Activity/Site Name:</b>	Reconstruction of a gas boiler house and organization of a biofuel supply system in Myrhorod, Poltava Oblast.
<b>Type of Activity:</b>	Reconstruction of a gas boiler house, including installation of a bio-boiler on bio-fuel, replacement of obsolete gas boiler equipment, installation of a gas-treating system for the bio-boiler, and organization of the straw packs storage facility
<b>Name of Reviewer and Summary of Professional Qualifications:</b>	Olena Chernikova, MDI Environmental Consultant, Sen.Lect., Dept. of Urban Environmental Engineering and Safety; Kharkiv National University of Urban Economy named after O.M.Beketova
<b>Date of Review:</b>	June 4, 2014

### A. Activity Description

#### 1. Activity purpose and need

The purpose of this activity is to reconstruct a gas boiler house and establish a bio-fuel supply system in Myrhorod, Poltava Oblast. The activity anticipates: 1) reconstruction of the existing gas boiler house building; 2) installation of three new modern gas boilers; 3) disassembly of five obsolete gas boilers; 4) installation of a bio-boiler that would use straw as a bio-fuel, 5) installation of a peripheral heating system and supplementary equipment for the bio-boiler, 6) construction of an annex for a straw packs storage facility adjunct to the existing gas boiler house building; 7) installation of a fire safety system; and 8) replacement of water pipes for a water supply pipeline used for fire protection.

Reconstruction of the existing gas boiler house and installation of the bio-boiler are needed (1) to support the sustainable community development and promote the innovations initiated by the LAESM Project via public private partnerships (PPPs), (2) to demonstrate advantages of local renewable fuel sources and substitute imported natural gas, (3) to develop basic local infrastructure and related logistical arrangements needed to ensure regular supply of local biomass for the bio-boiler procured and installed

with USAID's support, (4) to reduce CO<sub>2</sub> emissions and energy bills, and (5) to prepare investment proposals aimed at multiplying bio-fuel production in Poltava Oblast through PPPs.

Presently, the efficiency of five gas boilers (produced in 1987) is less than 80% and their capacity is 3.2 megawatt (0.64 MW each). The efficiency of new gas boilers will exceed 90% with capacity of 1.0 MW each; the efficiency of a bio-boiler will exceed 80-85% with capacity of 1.0 MW.

**2. Location of activity**

8, Spartakivsky Provulok, Myrhorod, Poltava Oblast, Ukraine.

**3. Beneficiaries, e.g., size of community, number of school children, etc.**

The total number of beneficiaries is 1,091 persons, including 700 people in eight residential buildings, 294 at school #3 and 97 at the kindergarten #5 located next to the boiler house.

**4. Number of employees and annual revenue, if this is a business**

N/A.

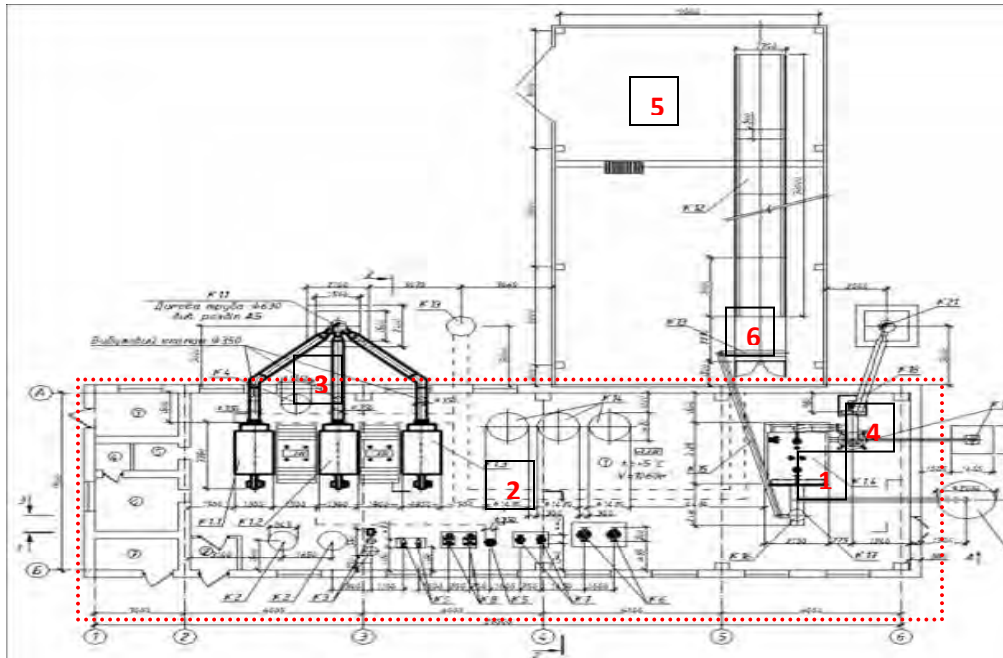
**5. Implementation timeframe and schedule**

Estimated timeframe of activity is September 2014 – April 2015.

**6. Detailed description of activity and site, e.g., size of the facility or hectares of land; steps that will be taken to accomplish the activity**

The proposed activity will take place on the territory of the existing gas boiler house, having a total area of 1727 m<sup>2</sup>, including 273,9 m<sup>2</sup> of existing facilities; over 1450 m<sup>2</sup> will be available for the packed straw storage facility, laying of the fire pipeline, and, a new heating pump equipment installation. The proposed activity provides for:

1) Reconstruction of the existing gas boiler house facility in view of improving fire safety of the building by putting an additional fire prevention coating to enforce walls, floor, and ceiling, replace wooden windows, etc. The cost of the reconstruction works will be co-shared between USAID, Myrhorod Municipality, and Myrhorod District Heating Utility; reconstruction and supplementary equipment will be purchased with USAID funds.



- 1 - ,“Lin-ka” bio-boiler
  - 2- New modern gas boilers KCBa-1.0 ECO
  - 3 - Supplementary equipment for gas boilers
  - 4- Supplementary equipment for the bio-boiler
  - 5 - Straw storage – new building
  - 6 – Equipment of the straw storage facility
- The border of the existing boiler house building is indicated by a dotted line.

Diagram 1. Scheme of the boiler house building and planned improvements

2) Installation of three new modern gas boilers KCBa-1.0 ECO (#2 on Diagram 1), with capacity of 1.0 MW each and efficiency exceeding 90%, replacement of the old peripheral heating system, and installation of supplementary equipment (#3 on Diagram 1): heating pumps, pipes, etc. The costs incurred with procurement of the new gas boilers and certain supplementary equipment will be co-shared by Poltava Oblast State Administration and Myrhorod Municipality. Installation works will be mainly financed by Myrhorod Municipality and Myrhorod District Heating Utility.

New gas boilers will consume 17 m<sup>3</sup> less natural gas for production of 1 megawatt of heat energy. Unlike the obsolete gas boilers, the new gas boilers will have higher technological and ecological safety; their efficiency will exceed 90%.

3) Disassembly of five obsolete gas boilers NIISTU-5, with capacity of 0,65 MW each and with the efficiency coefficient less than 80%; all works will be executed and financed by the local partner Myrhorod District Heating Utility.

The depreciated old gas boilers will be taken to a specialized company and utilized according to the Building Norms and Rules SNiP II-35-76 part II – Design norms, section 35 “Boilers”; Article 24 of the Law of Ukraine “On Waste” 187/98-VR last amended on April 26, 2014; Section D of the State Sanitary Norms and Rules governing maintenance of community territories (approved by Order #145 of the Ministry of Health of Ukraine on March 17, 2011). In other words, the bricks will be re-used; metal components of the gas boilers will be recycled.

4) Installation of a 1.0 MW “Lin-ka” bio-boiler (#1 on Diagram 1), that will use straw as a bio-fuel, and a gas-treating system (#4 on Diagram 1). USAID funds will be used for procurement of the bio-boiler and a gas treating system, construction materials (building materials, mounting, fixing, etc.), and supplementary equipment; major part of the works will be executed with USAID funds. Preparatory works will be financed by the local partner Myrhorod District Heating Utility.

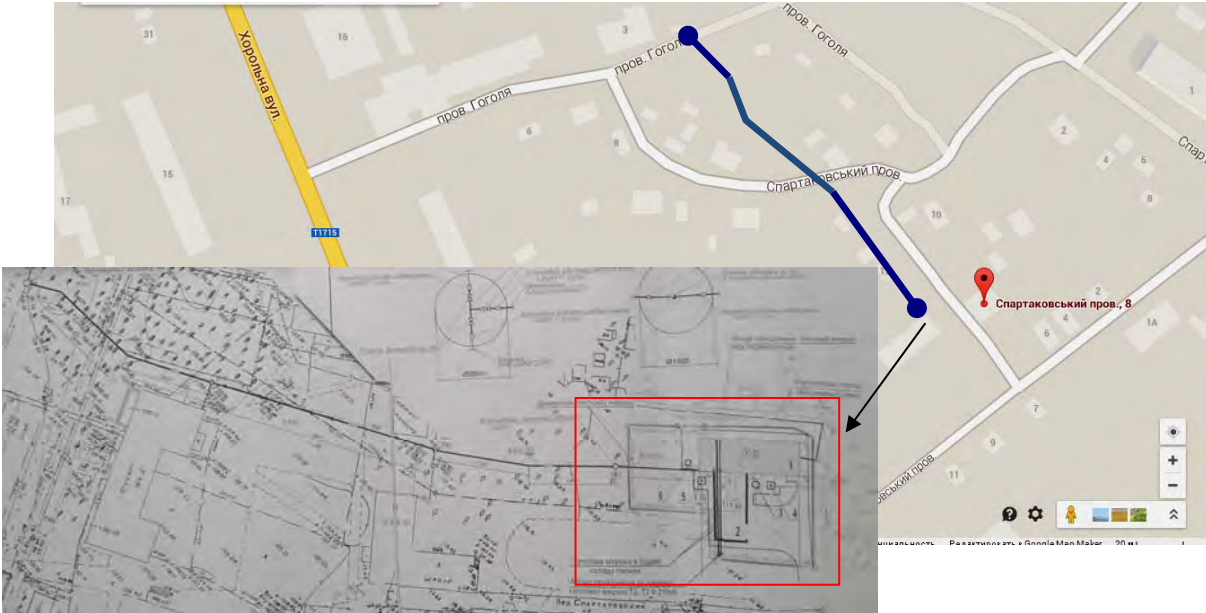
5) Installation of a peripheral heating system and supplementary equipment for the bio-boiler, and installation of a new smoke pipe 30 m in height. USAID funds will be used for procurement of installation materials and supplementary equipment as well as for works related to installation of the peripheral heating system and supplementary equipment. Preparatory works will be financed by the local partner Myrhorod District Heating Utility.

6) Build a straw packs storage facility (#5 on Diagram 1) adjunct to the existing gas boiler house building. The total area of the straw packs storage facility will be 171 m<sup>2</sup>. Maximum height of straw packs is up to 5.5 m. Storage facility's capacity of 420 m<sup>3</sup> will allow for the uninterrupted bio-boiler operation during a week. The following equipment will be used at the straw storage facility (#6 on Diagram 1): a beam crane, a straw transportation line, a chopper, a discharge cyclone, including equipment for pneumatic straw feeding to the bio-boiler. USAID funds will be used for procurement of construction materials, laying water supply and water discharge pipelines, and execution of the major part of reconstruction works; preparatory works will be co-financed by local partners: Myrhorod District Heating Utility and Myrhorod Municipality.

7) Installation of a fire safety system. Automatic fire alarms will be installed in the boiler house facility and in the straw storage facility. Automatic fire sprinklers are envisaged only in fire-hazardous areas (where straw is fed into the bio-boiler) and are not envisaged in the rest of the boiler house and in the straw storage facility. Existence of the fire alarm system in other areas is sufficient according to the current fire safety norms (fire will be extinguished manually with the help of fire hydrants). Fire hydrants (that will be used for fire engines and other relevant equipment) will be installed inside and outside the boiler house and the straw storage facility. USAID funds will be used for procurement of equipment, materials, and major part of the installation works; preparatory works will be financed by the local partner Myrhorod District Heating Utility.

8) Replacement of water pipes for a water supply pipeline used for fire protection and for the bio-boiler. Estimated daily water consumption is up to 20.0 m<sup>3</sup> in case of fire extinguishing or other emergencies. Maximum requested water discharge is 4,6 l/sec. Normally, the boiler house will consume half (9,5-10 m<sup>3</sup>) of water a day for cooling equipment and for household purposes. Five m<sup>3</sup> of water that will be used for cooling equipment is relatively clean and can be reused for cleaning streets, lawn watering, and other purposes as agreed with municipal services. The length of water supply pipeline will be 200 m with the pipes, 100 mm in diameter, made of HDPE. The depth of the water supply pipeline will be 1.8 m. The water supply pipeline will be connected to the existing urban water supply system (see Picture 1).

The existing bio-boiler wastewater line is connected to the urban wastewater system and meets all relevant requirements. Wastewater pipes are made of PP with diameters of 50 mm and 110 mm and connected to the municipal sewage system. USAID funds will be used for procurement of equipment, materials, and execution of the major part of installation works; preparatory works will be financed by the local partner Myrhorod District Heating Utility.



Picture 1. The planned water supply pipeline.

The proposed activity is located within 3 km distance from the historical center of Myrhorod and its main resort area, and more than 5-7 km from sanatoriums, mineral water sources, and recreational zones. The distance to the nearest river is over 1.2 km and the depth of the groundwater is 7-10 m. The proposed activity is located within 4,3 km distance from the aviation military unit. According to the Development Plan of Myrhorod, the proposed site of activity is located on the lands designated for industrial facilities and a residential area.

7. **Existing or planned certifications, e.g., ISO 14001 EMS, ISO 9000, HCCP, SA 8000, Global Gap, Environmental Product Declarations, Eco Flower, EcoLogo, Cradle to Cradle, UL Environment, GREENGUARD, Fair Trade, Green Seal, LEED, or various Forest Certifications**

N/A

8. **Site map, e.g., provide an image from Google Earth of the location**



Picture 2. Location of the gas boiler house, 8, Spartakivsky Provulok, Myrhorod.

9. Photos of the site



Picture 3. School #3 and its territory near the gas boiler house fence.



Picture 4. Existing gas boiler house building.



Picture 5. Territory of the gas boiler house where it is envisaged to locate a straw packs storage facility and install a new heat insulated smoke pipe (30 m height).



Picture 6. Existing gas boilers (produced in 1987, efficiency 80%)



## B. Activity-Specific Baseline Environmental Conditions

### 1. Population characteristics

Changes in the Myrhorod city population and territory are presented below.

Table 1

**Myrhorod population and territory**

Year	Population, thousand persons	Area of city, km <sup>2</sup>	Population density, thousand persons/km <sup>2</sup>
01/01/ 2006	41.8	20	2.09
01/01/ 2010	41.4	30	1.379
01/01/ 2013	41.109	30	1.37

Myrhorod population increases significantly in the summer time when Ukrainians and foreigners come for recreation, and reaches 49,000 people.

### 2. Geography

Myrhorod is located in Poltava Oblast, in the steppe zone of the central Ukraine. The total area of Poltava Oblast is 28.75 km<sup>2</sup> (4.5% of the territory of Ukraine); including 9.9% of the forest and other wooded areas, 5.16% of the surface water, 75.38% of the agricultural land, including 61.63% of the arable land.

Myrhorod is located in the southern part of the forest-steppe that reaches the Dnieper lowland. It is an undulating plain that descends to the Dnieper River from an elevation of 170–200 m in the northeast to 60–100 m in the southwest. Its major rivers include the Dnieper River and its tributaries, the Psol River, the Sula River, and the Vorskla River. The soil is mainly blacksoil. The region's natural steppe flora has largely disappeared and has been supplanted by cultivated plants. The region's forests are mainly oak, but also have stands of ash, maple, elm, and hornbeam. On the sandy terraces formed by the rivers there are also pines, birches, and alders. The climate is continental, with average January temperatures of  $-5.5^{\circ}\text{C}$  to  $-7.5^{\circ}\text{C}$  and July temperatures of  $20.9^{\circ}\text{C}$  to  $21.7^{\circ}\text{C}$ . The average annual precipitation is 430–560 mm.

### 3. Natural resources, e.g., nearby forest/protected areas, ground and surface water resources

Myrhorod is one of the most popular resorts in Ukraine famous for its mineral water. Presently, the local community is implementing a program according to which the natural territory of Myrhorod will be announced a National Spa zone.

### 4. Current land use

According to the Myrhorod General Plan, Myrhorod land stock includes lands occupied by public and commercial facilities; lands designated for recreation and spa, lands occupied by the transport infrastructure, lands designated for industrial facilities and needs, and a residential zone.

### 5. Proximity to public facilities, e.g. schools, hospitals, etc.

The activity works will be performed at a distance of 45 m to the secondary school #3; the school borders upon the site of the activity; the distance to the kindergarten #5 is more than 150 m. For the gas boiler house

where the proposed activity will take place, the size of the sanitary and protection zone is 15 m. The implementing partner has the official statement #03-01/68 from Poltava Oblast Laboratory Center of the State Sanitary and Epidemiological Service of Ukraine (dated July 23, 2013) where it confirms that the bio-fuel boiler project, including the size of the sanitary and protection zone, complies with the sanitary legislation of Ukraine. According to the state sanitary norms (see legislation item D-2-a) the concentration of all potential pollutants will be less than 0,75 of the allowed concentration outside of indicated 15 m zone.

## 6. Other relevant description of current environmental conditions in proximity to the activity N/A

### C. Legal, Regulatory, and Permitting Requirements

1. National environmental impact assessment requirements for this activity.
  - Law of Ukraine "On Environmental Protection" (1991, #1264-XII),
  - Law of Ukraine "On Ecological Expertise" (1995, #45/95-BP),
  - Law of Ukraine "About High Hazard Objects" (2001, #2245-II)
  - Decree of the Cabinet of Ministers of Ukraine "About types of activities and objects of high ecological hazard" #808 of August 28, 2013;
  - State Building Norms "Structure, preparation procedure, approval and adoption of design documentation for construction" (SBN A.2.2-3-2012)
  - State Building Norms "Structure and Content of Environment Impact Assessment (EIA) for the design and construction of enterprises, buildings, etc" (2003) (SBN A.2.2 -1- 2003)

Applicable National or local permits for this activity, responsible party, and schedule for obtaining them:

Permit Type	Responsible party	Schedule
Zoning – size of sanitary and protection area	Myrhorod District Heating Utility; Myrhorod Municipality	Already available July 23, 2013
Building/Reconstruction – construction of the straw storage facility, reconstruction of the gas boiler house. Excavation works during laying of a water supply pipeline	Myrhorod Heating Utility; Myrhorod Municipality	Already available  Expected in 2014-2015
Source Material Extraction	N/A	N/A
Waste Disposal	Myrhorod District Heating Utility	To be obtained in 2014-2015
Wastewater	Myrhorod District Heating Utility	To be obtained in 2014-2015
Storm Water Management	N/A	N/A
Air Quality	Myrhorod District Heating Utility	To be obtained in 2014-2015
Water Use	Myrhorod District Heating Utility	To be obtained in 2014-2015
Historical or Cultural Preservation	N/A	N/A
Wetlands or Water bodies	N/A	N/A
Threatened or Endangered Species	N/A	N/A
Other Fire inspection permit for the boiler house and straw operational storage	Myrhorod District Heating Utility	To be obtained in 2014-2015

2. Additional National, European Union, or other international environmental laws, conventions, standards with which the activity might be required to comply
  - a. Air emission standards
    - Law of Ukraine “*On Environment Protection*” (1991, #1264-XII)
    - Law of Ukraine “*On Air Protection*” (1992, #2707)
    - “*Emissions of pollutants into the atmosphere from power plants. Method of calculation*” (2002, SMD 34.02.305-2002)
    - Decree of the Ministry of Environment of Ukraine “*On approval of the maximum allowable pollutant emissions from stationary sources*” #309 of 27.06.2006
  - b. Water discharge standards
    - The Water Code of Ukraine* (1995, #2768-14)
  - c. Solid waste disposal or storage regulations
    - The Law of Ukraine “On Waste”* (1998, 187/98-VR)
    - State Sanitary Norms *DSanPiN 2.2.7.029-99 “Hygienic requirements for industrial waste management. Definitions of the type of hazard for public health”*
  - d. Other
    - The Law of Ukraine “*On Alternative Energy Sources*” (2003, #555-IV)
    - The Law of Ukraine “*On Amendments to Certain Laws of Ukraine to promote the production and use of biofuels*” (2009, #1391-VI).
    - National Sanitary Rules adopted by Decree #173 of the Ministry of Health of Ukraine in 1996
    - State Building Norms and Rules:
      - Order of the State Committee of Ukraine on Urban Planning and Architecture “*Urban Planning. Planning and Development of Urban and Rural Settlements*” (1992) (SBN 360-92)
      - Fire safety of construction* (2002) (SBN B.1.1- 7-2002)
      - Structure and content of design documentation for construction* (2012) (SBN A.2.2 -3 -2012)
      - Building Climatology (SSTC-N BV.1.1-27:2010).*
      - Industrial Safety in Construction* (SBN A.3.2-2-2009)
      - Organization of Construction* (SBN A.3.1-5-2009)
      - Engineering equipment of buildings and structures / Fire protection systems* (SBN B.2.5-56:2010)
      - Provision of public services and improvement of territories (State Building Norms DBN B.2.2-5:2011)*

**E. Engineering Safety and Integrity** (for Sections E. and F., provide a discussion for any of the listed issues that are likely to have bearing on this activity)

1. Will the activity be required to adhere to formal engineering designs/plans? Have these been or will they be developed by a qualified engineer? **YES, the design documentation will be developed by a qualified company.**
2. Do designs/plans effectively and comprehensively address:
  - a. Management of storm water runoff and its effects? **N/A**
  - b. Reuse, recycling, and disposal of construction debris and by-products? **YES**

**During reconstruction works, construction debris will be reused for concrete consolidation, roadway paving, etc.**

- c. Energy efficiency and/or preference for renewable energy sources? **YES.**  
**Activity realization will support development and implementation of local alternative energy solutions in Myrhorod.**

- d. Pollution prevention and cleaner production measures? **YES.**  
**A gas treatment unit for the bio-boiler will be installed outside of the boiler house in order**

to prevent atmospheric emission and to collect and utilize/dispose ash. It consists of the two-level treatment system: level 1 - a cyclone, level 2 - a fine filter. The gas treatment unit will purify combustion gas from disperse particles. A smoke bonnet will connect the bio-boiler and the gas treatment unit.

- e. Maximum reliance on green building or green land-use approaches? **NO**
  - f. Emergency response planning? **YES.**  
**The fire protection system, including automatic fire sprinklers, fire-alarm system, fire hydrants inside and outside the boiler house and straw storage facility will be installed. The fire protection system includes automatic fire sprinklers which will be located in fire-hazardous areas (where straw is fed into the bio-boiler).**
  - g. Mitigation or avoidance of occupational safety and health hazards? **YES.**  
**For the purpose of mitigation of occupational safety, safety regulations will be introduced. Personnel will wear protective clothing and respirators. Before commencement of any works, workers will undergo training on safety on a daily basis..**
  - h. Environmental management of mobilization and de-mobilization? **YES.**  
**According to national legislation, the EIA, as the mandatory part of design documentation, was conducted and environmental management solutions and tools for different project stages were defined.**
  - i. Capacity of the host country recipient organization to sustain the environmental management aspects of the activity after closure and handover? **YES, the host country recipient organization is capable to sustain the environmental management aspects of the activity after closure and handover.**
  - j. Are there known geological hazards, e.g., faults, landslides, or unstable soil structure, which could affect the activity? If so, how will the project ensure structural integrity?  
**Not detected**
3. Will the site require grading, trenching, or excavation? Will the activity generate borrow pits? If so, how will these be managed during implementation and closure? **YES. A water supply pipeline (200 m) will be laid, with HDPE pipes of 100 mm in diameter. The water supply pipeline will be connected to the existing urban water supply system. Trenching and excavation works will be executed to lay the water supply pipeline at the depth of 1.8 m. The excavated soil will be covered by plastic films to minimize any wind erosion. The pipeline trench will be filled up with excavated soil as soon as water pipes are laid and water supply line is tested. Pipes will be put and, where possible, section-tested before backfilling trenches, in order to minimize any further wind erosion of the extracted soil. Erosion control measures will be implemented until the vegetation is restored. Trenching and excavation works won't create any landscape changes. No borrow pits will be generated.**
  4. Will the activity cause interference with the current drainage systems or conditions? **NO.**  
Will it increase the risk of flooding? **NO**
  5. Will the activity interfere with above- or below-ground utility transmission lines, e.g., communications, water, sewer, or natural gas? **YES. Before the beginning of any excavation works and laying of water supply pipeline, the location of below-ground utility transmission lines will be checked, including communications, electricity supply, water, sewer, and natural gas on the site of the proposed activity. Obtaining a special permission for excavation works is mandatory.**
  6. Will the activity potentially interfere with vehicle or pedestrian traffic? **Maybe. Road signs will be used and temporary flex barriers will be installed during the re-construction works.**

7. Does the activity increase the risk of fire, explosion, or hazardous chemical releases? **Maybe. Safety regulations will be introduced.**
8. Does the activity require disposal or retrofitting of polychlorinated biphenyl-containing equipment, e.g., transformers or florescent light ballasts? **NO**

## F. Environment, Health, and Safety Consequences

### 1. Potential impacts to public health and well-being

- a. Will the activity require temporary or permanent property land taking? **NO**
- b. Will activities require temporary or permanent human resettlement? **NO**
- c. Will area residents and/or workers be exposed to pesticides, fertilizer, or other toxic substances, e.g., as a result of farming or manufacturing? **Maybe.** If so, how will the project:
  - i. Ensure that these chemicals do not contaminate ground or surface water? **Safety regulations will be elaborated. Safe storage will prevent the contact of straw and ashes with the ground and surface water. The boiler house will discharge wastewater into the municipal sewage system.**
  - ii. Ensure that workers use protective clothing and equipment to prevent exposure? Control releases of these substances to air, water, and land? **Safety regulations will be elaborated, including the provision of protective clothing and respirators for workers, and regular air quality checks.**
  - iii. Restrict access to the site to reduce the potential for human exposure? **Safety regulations will be elaborated. Access to the site will be limited.**
- d. Will the activity generate pesticide, chemical, or industrial wastes? Could these wastes potentially contaminate soil, groundwater or surface water? **N/A**
- e. Will chemical containers be stored at the site? **NO**
- f. Does the activity remove asbestos-containing materials or use of building materials that may contain asbestos, formaldehyde, or other toxic materials? **Maybe.** Can the project certify that building materials are non-toxic? If so, how will these wastes be disposed of? **Asbestos-containing materials, if any, will be collected, removed, utilized or disposed of on an authorized landfill.**
- g. Will the activity generate other solid or hazardous wastes such as construction debris, dry or wet cell batteries, florescent tubes, aerosol cans, paint, solvents, etc.? **YES.** If so, how will this waste be disposed of?  
**During the construction works solid waste will be generated – construction debris, remnants of packaging materials, paints, solvents, aerosol cans, etc. This waste will be temporary collected on the boiler house territory and removed and disposed of (if recycling is not possible) at an authorized landfill once a week.**
- h. Will the activity generate nontoxic, nonhazardous solid wastes (subsequently requiring land resources for disposal)? **YES. The proposed activity will generate ash. It will be temporary collected on the boiler house territory and removed and disposed of on landfill once a week. After ash is tested, it will be delivered to farmers for agricultural needs, etc.**
- i. Will the activity pose the need to handle and dispose of medical wastes? **NO**  
If so, describe measures of ensuring occupational and public health and safety, both onsite and offsite.
- j. Does the activity provide a new source of drinking water for a community? **NO** If so, how will the project monitor water quality in accordance with health standards?
- k. Will the activity potentially disturb soil contaminated with toxic or hazardous materials? **NO**
- l. Will activities, e.g., construction, refurbishment, demolition, or blasting, result in increased noise or light pollution, which could adversely affect the natural or human environment? **NO**

## 2. Atmospheric and air quality impacts

- a. Will the activity result in increased emission of air pollutants from a vent or as fugitive releases, e.g., soot, sulfur dioxide, oxides of nitrogen, volatile organic compounds, methane. **NO**. Will the activity involve burning of wood or biomass? **YES. Straw (a solid bio-fuel) will be burnt in the bio-boiler.**
- b. Will the activity install, operate, maintain, or decommission systems containing ozone depleting substances, e.g., freon or other refrigerants? **NO**
- c. Will the activity generate an increase in carbon emissions? **NO**
- d. Will the activity increase odor and/or noise? **Maybe. Due to potential increase of soot and ash emission in adverse weather conditions and due to some kinds of renovation works, in particular, painting.**

## 3. Water quality changes and impacts

- a. How far is the site located from the nearest river, stream, or lake? **Distance to the nearest river - 1.2 km.**
- b. Will the activity disturb wetland, lacustrine, or riparian areas? **NO**
- c. What is the depth to groundwater at the site? **Depth to the groundwater at the site is 7-10 m.**
- d. Will the activity result in increased ground or surface water extraction? **NO**. If so, what are the volumes? Permit requirements?
- e. Will the activity discharge domestic or industrial sewage to surface, ground water, or publicly-owned treatment facility? **YES. The boiler house wastewater will be discharged into the municipal sewage system. Safety regulations will be elaborated in order to prevent contact of the discharged water with ground and surface waters.**
- f. Does the activity result in increased volumes of storm water run-off and/or is there potential for discharges of potentially contaminated (including suspended solids) storm water? **NO**
- g. Will the activity result in the runoff of pesticides, fertilizers, or toxic chemicals into surface water or groundwater? **NO**
- h. Will the activity result in discharge of livestock wastes such as manure or blood into surface water? **NO**
- i. Does the site require excavation, placing of fill, or substrate removal (e.g., gravel) from a river, stream or lake? **NO**

## 4. Land use changes and impacts

- a. Will the activity convert fallow land to agricultural land? **NO**
- b. Will the activity convert forest land to agricultural land? **NO**
- c. Will the activity convert agricultural land to commercial, industrial, or residential uses? **NO**
- d. Will the activity require onsite storage of liquid fuels or hazardous materials in bulk quantities? **NO**
- e. Will the activity result in natural resource extraction, e.g., granite, limestone, coal, lignite, oil, or gas? **NO**
- f. Will the activity alter the viewshed of area residents or others? **NO**

## 5. Impacts to forestry, biodiversity, protected areas and endangered species

- a. Is the site located adjacent to a protected area, national park, nature preserve, or wildlife refuge? **NO. Distance to the Myrhorod resort area is above 3 km.**
- b. Is the site located in or near threatened or endangered (T&E) species habitat? **NO** Is there a plan for identifying T&E species during activity implementation? If T&E species are identified during implementation, is there a formal process for halting work, avoiding impacts, and notifying authorities?
- c. Is the site located in a migratory bird flight or other animal migratory pathway? **NO**
- d. Will the activity involve harvesting of non-timber forest products, e.g., mushrooms, medicinal and aromatic plants (MAPs), herbs, or woody debris? **NO**

e. Will the activity involve tree removal or logging? **NO**. If so, please describe.

**6. Historic or cultural resources**

- a. Are there cultural or historic sites located at or near the site? **NO**. If so, what is the distance from these? What is the plan for avoiding disturbance or notifying authorities?
- b. Are there unique ethnic or traditional cultures or values present in the site? **NO**. If so, what is the applicable preservation plan?

**G. Further Analysis of Recommended Actions** (if the applicable IEE requires the use of ERCs to perform further analysis of recommended actions, then check the appropriate box below. If this analysis is not required, then skip this and proceed with Section H. If required by the IEE, the ERC shall be copied to the Bureau Environmental Officer (BEO)).

**1. Categorical Exclusion:** The activity is not likely to have an effect on the natural or physical environment. No further environmental review is required.\*

**2. Negative Determination with Conditions:** The activity does not have potentially significant adverse environmental, health, or safety effects, but may contribute to minor impacts that can be eliminated or adequately minimized by appropriate mitigation measures. EMMPs shall be developed, approved by the Mission Environmental Officer (MEO) (and the BEO if required by the IEE) prior to beginning the activity, incorporated into workplans, and then implemented. See Sections H and I below.\*

**3. Positive Determination:** The activity has potentially significant adverse environmental effects and requires further analysis of alternatives, solicitation of stakeholder input, and incorporation of environmental considerations into activity design. A Scoping Statement must be prepared and be submitted to the BEO for approval. Following BEO approval an Environmental Assessment (EA) will be conducted. The activity may not be implemented until the BEO clears the final EA. For activities related to the procurement, use, or training related to pesticides, a PERUSAP will be prepared for BEO approval.

**4. Activity Cancellation:** The activity poses significant and immitigable adverse environmental effects. Adequate EMMPs cannot be developed to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

**\*Note regarding applicability related to Pesticides (216.2(e):** The exemptions of §216.2(b)(1) and the categorical exclusions of §216.2(c)(2) *such as technical assistance, education, and training* are not applicable to assistance for the procurement or use of pesticides.

**H. EMMPs** (Using the format provided below, or its equivalent, list the processes that comprise the activity, then for each, identify impacts requiring further consideration, and for each impact describe the mitigation and monitoring measures that will be implemented to avoid or adequately minimize the impacts. All environment, health, and safety impacts requiring further consideration, which were identified in Section F., should be addressed)

**1. Activity-specific environmental mitigation plan** (Upon request, the MEO may be able to provide your project with example EMMPs that are specific to your activity.)

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
Mobilization and Site Preparation				
Ensuring work safety	- Human health	<b>YES</b>	- The works should be executed according to State Building Norms	Work safety briefing records

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			DBN A.3.2-2-2009 “Industrial Safety in Construction” and DBN A.3.1-5-2009 “Organization of Construction” - Perform training on safety prior to the start of the works and throughout the activity.	
Development of a site reconstruction plan	Impact on air, water, land and human health	<b>YES</b>	- Develop a plan for site reconstruction, including EIA procedures, technical solutions, etc, prior to the start of the works - Design project activities to minimize any impact of the anticipated works on the environment and public health in compliance with State Building Norms (DBN A.2.2 -1- 2003) “Structure and Contents of the Environmental Impact Assessment (EIA) for design and construction of enterprises, buildings, etc.” and “Structure, preparation procedure, approval and adoption of design documentation for construction” (DBN A.2.2-3-2012). - Develop a safety plan, an excavation and erosion control plan, and a re-cultivation plan.	Technical reports EIA report Site reconstruction plan <u>Safety plan</u> <u>Excavation and erosion control plan</u> <u>Re-cultivation plan</u>
Procurement of materials: a bio-boiler with set of supporting equipment and gas-treating system, 3 gas boilers, 1 smoke pipe, peripheral supplementary equipment	Impact on air, water, land and human health	<b>YES</b>	- It is necessary to purchase certified materials and equipment. Certificates should confirm safety, relevant specifications, conditions, and non-toxic components of materials.	Certificates for materials and equipment
Permits and licenses	- Waste disposal and recycling - Use of water resources		-Obtain necessary permits and licenses before the start of the works - Sign a contract for execution of works with companies which have	Permits, licenses, contracts with companies-



Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
	- Reconstruction works on municipal land		appropriate licenses to perform the works - Have a proof of contractors' use of appropriate equipment, including transport	contractors
Activity Implementation Phase				
Boiler house renovation	- Human health - Dust and noise - Impact on air - Impact on land	<b>YES</b>	Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to the start of works  - minimize the impact on staff health (use respirators, protective clothes, etc.)  - limit access of the non-authorized personnel to the site  - use warning signs  Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ...": - collect waste in a container with a lid and dispose waste on the landfill after the works are finished;  -if the above option is not acceptable, prepare the ground for temporary storage of waste.  -Re-use bricks and recycle metal parts of the demolished gas boilers.	- Observations - Work safety briefing records and lists of provided protective clothes -Service agreements (waste removal and disposal)
New gas boilers installation	-Human health -Impact on land, air - Dust and noise	<b>YES</b>	Minimize the impact on human health as required by State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and DBN A.3.1-5-2009 "Organization of Construction": - perform training on safety prior to	- Work safety briefing records and lists of provided protective clothes

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			<p>the start of works</p> <ul style="list-style-type: none"> <li>- As part of the safety plan, request staff to use respirators, protective clothes, etc.</li> <li>- Include safety rules into the contract requirement.</li> <li>- limit access of the non-authorized personnel to the site.</li> <li>- use warning signs.</li> </ul> <p>Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ...":</p> <ul style="list-style-type: none"> <li>- collect waste that can be recycled (metal, wood, glass, concrete) in separate containers with lid and dispose the waste on the landfill after the works are finished.</li> <li>- if the above option is not acceptable, prepare the ground for temporary storage of waste.</li> <li>- Fire safety guaranteed by compliance with rules and regulations established by State Building Norms DBN B.1.1- 7-2002 "Fire safety of construction"</li> </ul>	<ul style="list-style-type: none"> <li>-Waste service agreements</li> <li>- Safety plan</li> </ul>
Replacement of the peripheral heating system and supplementary equipment	<ul style="list-style-type: none"> <li>-Human health</li> <li>-Impact on land, air.</li> <li>- Dust and noise</li> </ul>	<b>YES</b>	<p>Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and SBN A.3.1-5-2009 "Organization of Construction":</p> <ul style="list-style-type: none"> <li>- perform training on safety prior to the start of works</li> <li>- As part of the safety plan, request staff to use respirators, protective clothes, etc.</li> <li>- As part of the safety plan, include safety rules into the contract</li> </ul>	<ul style="list-style-type: none"> <li>- Observations</li> <li>- Work safety briefing records and lists of provided protective clothes</li> <li>-Waste service agreements</li> <li>- Fire safety plan and records</li> </ul>

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			<p>requirement.</p> <p>Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ..." by collecting waste in a container with a lid and disposing waste on the landfill after the works are finished.</p> <ul style="list-style-type: none"> <li>- Minimize the dust, impact on the air with delicate removal of the obsolete peripheral equipment.</li> <li>- Fire safety guaranteed by compliance with rules and regulations established by State Building Norms DBN B.1.1- 7-2002 "Fire safety of construction" and SBN B.2.5-56:2010 "Fire protection systems".</li> </ul>	<ul style="list-style-type: none"> <li>- <u>Safety plan</u></li> </ul>
Disassembly of obsolete gas boilers	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air.</li> <li>- Dust and noise</li> </ul>	<b>YES</b>	<p>Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 "Industrial Safety in Construction" and SBN A.3.1-5-2009 "Organization of Construction":</p> <ul style="list-style-type: none"> <li>- perform training on safety prior to the start of works and throughout the activity.</li> <li>- request staff to use respirators, protective clothes, etc.</li> </ul> <p>Minimize the impact on land in accordance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ..." by collecting waste in a container with a lid and disposing waste on the landfill after the works are finished.</p> <ul style="list-style-type: none"> <li>- Minimize the dust, impact on the air with delicate removal of the obsolete gas boilers.</li> <li>- Fire safety guaranteed by compliance with rules and</li> </ul>	<ul style="list-style-type: none"> <li>- Observations</li> <li>- Work safety briefing records and lists of provided protective clothes</li> <li>-Waste service agreements</li> <li>- Fire safety plan and records</li> <li>- <u>Safety plan</u></li> <li>- <u>Utilization receipts</u></li> </ul>

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			<p>regulations in compliance with State Building Norms DBN B.1.1- 7-2002 “Fire safety of construction”.</p> <ul style="list-style-type: none"> <li>- Utilize obsolete gas boilers according to the relevant norms and regulations (Building Norms and Rules SNiP II-35-76 part II – Design norms, section 35 “Boilers”; Article 24 of the Law of Ukraine “On waste” 187/98-VR last amended on April 26, 2014; Section D of State Sanitary Norms and Rules governing maintenance of community territories (approved by Order #145 of the Ministry of Health of Ukraine on March 17, 2011). Bricks will be re-used; metal components of the gas boilers will be recycled as appropriate.</li> </ul>	
<p>Bio-boiler and peripheral equipment installation, including a gas treatment system</p>	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air.</li> <li>- Dust and noise</li> </ul>	<p><b>YES</b></p>	<p>Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 “Industrial Safety in Construction” and SBN A.3.1-5-2009 “Organization of Construction”:</p> <ul style="list-style-type: none"> <li>- perform training on safety prior to the start of works.</li> <li>- As part of the safety plan, request staff to use respirators, protective clothes, etc.</li> <li>- As part of the safety plan, include safety rules into the contract requirement.</li> </ul> <p>Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 “Hygienic requirements for industrial waste management ...” by collecting waste in a container with a lid and disposing waste on the landfill after the works are finished.</p> <ul style="list-style-type: none"> <li>- Fire safety guaranteed by compliance with rules and regulations established by State</li> </ul>	<ul style="list-style-type: none"> <li>- Observations</li> <li>- Work safety briefing records and lists of provided protective clothes</li> <li>-Waste service agreements</li> <li>- Fire safety plan and records</li> <li>- <u>Safety plan</u></li> </ul>

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			<p>Building Norms DBN B.1.1- 7-2002 Fire safety of construction and SBN B.2.5-56:2010 “Fire protection systems”:</p> <ul style="list-style-type: none"> <li>- install an automatic fire alarm system and fire hydrants inside and outside the boiler house</li> </ul>	
A straw storage facility construction, including installation of a beam crane, transfer conveyor, straw chopper and equipment of pneumatic bio-boiler feeding	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air and water</li> <li>- Dust and noise</li> </ul>	<b>YES</b>	<p>Minimize the impact on human health in compliance with State Building Norms DBN A.3.2-2-2009 “Industrial Safety in Construction” and SBN A.3.1-5-2009 “Organization of Construction”:</p> <ul style="list-style-type: none"> <li>- conduct training on safety prior to the start of works</li> <li>- As part of the safety plan, request staff to use respirators, protective clothes, etc.</li> <li>- As part of the safety plan, include safety rules into the contract requirement.</li> </ul> <p>Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ..." by collecting waste in a container with a lid and disposing waste on the landfill after the works are finished.</p> <ul style="list-style-type: none"> <li>- A detailed plan of the straw storage facility, fire protection facilities, and an erosion control plan should be developed.</li> <li>- Install an automatic fire alarm system and install fire hydrants inside and outside of the storage facility (according to design documents and State Building Norms DBN B.1.1- 7-2002 “Fire safety of construction” and DBN B.2.5-56:2010 “Fire protection systems”).</li> </ul>	<ul style="list-style-type: none"> <li>- Design documentation,</li> <li>- Fire inspections permit and fire inspections records</li> <li>- Work safety briefing records</li> <li>- <u>Erosion control plan</u></li> <li>- <u>Safety plan</u></li> </ul>
Building a water supply	<ul style="list-style-type: none"> <li>- Human health</li> </ul>	<b>YES</b>	<p>Minimize the impact on human health in compliance with State</p>	Work safety briefing records

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
<p>pipeline construction (trenching, laying pipes, backfilling of trenches)</p>	<ul style="list-style-type: none"> <li>- Impact on land, air, groundwater</li> <li>- Dust and noise</li> </ul>		<p>Building Norms DBN A.3.2-2-2009 “Industrial Safety in Construction” and DBN A.3.1-5-2009 “Organization of Construction”</p> <ul style="list-style-type: none"> <li>- conduct training on safety prior to the start of works and throughout the activity;</li> <li>- request staff to use respirators, protective clothes, etc;</li> </ul> <p>Minimize the impact on land, air, etc. in compliance with State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management ...”</p> <ul style="list-style-type: none"> <li>- generated waste should be removed from site daily and disposed on landfill, re-used or recycled.</li> </ul> <p>Use machines with low level of noise and emissions which meet the requirements of State Building Norms DBN B.2.8-9-98. “Construction machinery, equipment and tools. Operation of construction equipment. General requirements”.</p> <ul style="list-style-type: none"> <li>- the extracted fertile soil will be covered by plastic films to minimize any wind erosion and prevent future contamination. Trenches will be backfilled with excavated soil. This requirement will be included into the erosion control plan.</li> <li>- Removed infertile soil should be stored at 0.5 m distance from the trench edge</li> <li>- Minimize contamination of soil/water associated with the work of construction machinery. If fuel and/or lubricants (F&amp;L) are spilled, the contaminated soil and/or water should be removed and disposed on a landfill.</li> </ul> <p>If trenching and further backfilling of trenches and compacting produce</p>	<p>and lists of provided protective clothes</p> <ul style="list-style-type: none"> <li>- Observation</li> <li>- Developed technical documentation</li> <li>- Waste service agreements</li> <li>- Permission for excavation works</li> <li>- <u>Erosion control plan</u></li> </ul>

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			excess soil and rising ground, the rising ground shall be smoothed and excess soil shall be used for roadwork (roadside repair, etc.)	
Site Closure				
Removal of waste, instruments and working equipment	- Impact on soil, air, and human health	<b>YES</b>	<ul style="list-style-type: none"> <li>- Minimize the impact on staff health (use protective clothes, etc.) in compliance with State Building Norms DBN A.3.2-2-2009 “Industrial Safety in Construction” and SBN A.3.1-5-2009 “Organization of Construction”</li> <li>- Use machines with low level of noise and emissions</li> <li>- Dispose waste in compliance with a corresponding, hazard-type-based, waste disposal procedure and a possibility of recycling (State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management. Definitions of the class of hazard for public health")</li> <li>- Disposal of waste and residue of building materials, tools and work equipment</li> </ul>	<ul style="list-style-type: none"> <li>- Observations</li> <li>- Technical reports</li> <li>- Bills for waste disposal</li> </ul>
Erosion control plan, including re-cultivation and territory upgrading	- Impact on soils and vegetation	<b>YES</b>	<ul style="list-style-type: none"> <li>- Develop the erosion control plan and include erosion control as a contract requirement.</li> <li>- If necessary, provide technical and biological re-cultivation, if ground surface, road elements or vegetation were disturbed during reconstruction works as it is stipulated by State Building Norms DBN B.2.2-5:2011 “Provision of public services and improvement of territories”.</li> <li>- Technical re-cultivation (backfilling trenches and smoothing the surface)</li> <li>- Biological re-cultivation (sowing grass, planting bushes and trees)</li> </ul>	<ul style="list-style-type: none"> <li>- Re-cultivation plan</li> <li>- Observations</li> <li>- <u>Erosion control plan</u></li> </ul>

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
Activity Handover. Site Exploitation				
Air emissions control	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on air</li> </ul>	<b>YES</b>	<ul style="list-style-type: none"> <li>- Local ecological inspection checks emissions and confirms they are within the fixed limits for Myrhorod. It also issues permits on maximum permissible emissions (according to the Decree of the Ministry of Environment of Ukraine “On approval of the maximum allowable pollutant emissions from stationary sources” #309 of 27.06.2006)</li> <li>- Minimize the impact on population health due to permanent control and maintenance of gas treating facilities in compliance with: State Sanitary Rules established by Order #173 of the Ministry of Health of Ukraine in 1996.; The Environmental Protection Law of Ukraine (1991, #1264-XII); The Air Protection Law of Ukraine (1992, #2707), etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Permits obtained</li> <li>- Records of checking the gas treating facilities</li> </ul>
Ash utilization	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air and water</li> </ul>	<b>YES</b>	<p>Ash will either be disposed on a landfill or be sold to local farmers after testing (ash tests for chloride-bearing waste, heavy metals, etc.)</p> <p>State Sanitary Norms DSanPiN 2.2.7.029-99 "Hygienic requirements for industrial waste management and definitions of the class of hazard for public health."</p>	Receipts on waste disposal; sale receipts, and receipts of ash transfer to a construction company
Safety of straw packs transportation	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air and water</li> </ul>	<b>YES</b>	<ul style="list-style-type: none"> <li>- Minimize the impact on staff health (use respirators, protective clothing, etc.) Law of Ukraine “On work safety” #2695-XII of 14.10.1992.</li> <li>- Minimize the impact on land, air and water by using a covered trailer and an approved transportation route, as stipulated by the</li> </ul>	<ul style="list-style-type: none"> <li>- Work safety briefing records</li> <li>- Lists of provided protective clothes</li> <li>- Copies of waybills</li> </ul>



Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			Environmental Protection Law of Ukraine (#1264-XII of 1991), National Sanitary Rules #173 of 1996, approved by the Ministry of Health of Ukraine	
Safety of straw storage	<ul style="list-style-type: none"> <li>- Human health</li> <li>- Impact on land, air and water</li> </ul>	<b>YES</b>	<ul style="list-style-type: none"> <li>- Minimize the impact on staff health (use respirators, protective clothing, etc.) Law of Ukraine “On work safety” #2695-XII of 14.10.1992.</li> <li>- Minimize the impact on land, air and water by following safety rules as stipulated by the Environment Protection Law of Ukraine ( #1264-XII of 1991).</li> <li>- Fire safety control by local fire inspection and checking the fire protection system</li> </ul>	<ul style="list-style-type: none"> <li>- Work safety briefing records</li> <li>- Lists of protective clothes provided to staff</li> <li>- Records of inspection of the fire protection system</li> </ul>

## 2. Activity-specific monitoring plan

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
Visual reviews of renovation and construction works with necessity to provide photos	At inception phase, once a week, and upon a completion of work	MDI, Company-Subcontractor	- Project Interim and Final Reports
Records on work safety briefings	Before the start of each phase of work	Company-Subcontractor	- Records on work safety briefings
Certificates (for non-toxic, asbestos-free materials) for purchasing construction materials	Before the start of relevant phase of work	Company supplier	- Project Interim and Final Reports
Approved general plan of the site reconstruction, including technical and safety sections, the excavation and erosion control plans, and technical and biological re-cultivation plan.	Once, before start of the site reconstruction	Myrhorod District Heating Utility; Myrhorod Municipality	- Approved plan and technical documentation Permits for all kinds of construction and excavation works
Air pollution permits obtained Boiler operators trained in technical and environmental safety	Permits obtained regularly according to the national legislation	Private partner Myrhorod District Heating Utility; MDI	- Permits obtained - Plan of trainings, reports and list of participants
Water use permit obtained Training for boiler operators on technical and environmental	Once, before start of relevant phase of work	Myrhorod District Heating Utility; Myrhorod	- Permit obtained - Report on training and lists of

<b>Monitoring Indicators</b>	<b>Monitoring and Reporting Frequency</b>	<b>Responsible Parties</b>	<b>Records Generated</b>
safety		Municipality, MDI	participants
Payments for waste disposal	Monthly monitoring	Myrhorod District Heating Utility	- Receipts of payments for waste disposal or sale of ash to the local community and farmers
Fire permit obtained	Myrhorod District Heating Utility is monitored by the Myrhorod fire inspection	Myrhorod District Heating Utility	- Permit obtained - Records of fire safety inspection

**I. Certification of No Adverse or Significant Effects on the Environment**

I, the undersigned, certify that activity-specific baseline conditions and applicable environmental requirements have been properly assessed; environment, health, and safety impacts requiring further consideration have been comprehensively identified; and that adverse impacts will be effectively avoided or sufficiently minimized by proper implementation of the EMMP(s) in Section G. If new impacts requiring further consideration are identified or new mitigation measures are needed, I will be responsible for notifying the USAID COR/AOR, as soon as practicable. Upon completion of activities, I will submit a **Record of Compliance with Activity-Specific EMMPs** using the format provided in ERC Annex 1 or its equivalent.

  
 \_\_\_\_\_  
 Ruslan Tormosov, LAESM Project Director/COP

26.09.2014  
 \_\_\_\_\_  
 Date

**J. Approvals:**

  
 \_\_\_\_\_  
 Maria Garastovskaya, USAID AOR

26.09.2014  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Peter Luzik, Mission Environmental Officer

  
 L. Piskemova

09/26/14  
 \_\_\_\_\_  
 Date

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**ERC ANNEX 1  
RECORD OF COMPLIANCE WITH ACTIVITY-SPECIFIC  
ENVIRONMENTAL MITIGATION AND MONITORING PLANS (EMMPs)**

<b>Subject:</b>	<i>Ukraine/Local Alternative Energy Solutions in Myrhorod (LAESM) – Reconstruction of a Gas Boiler House and Organization of a Biofuel Supply System in Myrhorod, Poltava Oblast / IDEA ODP SIEE_LAESM_ND; DCN: 2014-UKR-014</i>
<b>To:</b>	<i>Maria Garastovskaya /AOR/Activity Manager</i>
<b>Copy:</b>	<i>Larissa Piskunova/Deputy Mission Environmental Officer</i>
<b>Date:</b>	November 30, 2015

All-Ukrainian Charitable Organization “Municipal Development Institute” (MDI) in partnership with Myrhorod Municipality and Myrhorod Heating Company “Myrhorodteploenergo” have finalized the activities regarding reconstruction of a gas boiler house on 8, Spartakivsky Prov. in Myrhorod. This included installation of a bio-boiler on bio-fuel, replacement of obsolete gas boiler equipment, installation of a gas-treating system for the bio-boiler, and organization of the straw packs storage facility. This memorandum is to certify that MDI and Myrhorod Municipality and Myrhorod Heating Company “Myrhorodteploenergo” have met all conditions of the EMMPs for this activity. A summary of the how mitigation and monitoring requirements were met is provided below.

**1. Mobilization and Site Preparation**

Work safety was ensured for prevention of any accidents during reconstruction and assembly works. This included development of a safety plan, an excavation and erosion control plan, and a re-cultivation plan; purchase of certified materials with non-toxic components and equipment with necessary specifications; permits and licenses were obtained before the start of the works.

**2. Activity Implementation Phase**

During the activity implementation phase, expected were human health impact, dust and noise, impact on air; and odor slightly increased. The impact on the air was minimized due to the delicate removal of the obsolete peripheral heating system equipment and obsolete gas boilers. Minimizing the noise and impact on air was possible due to the use of machines with low level of noise and emissions. The impact on the workers’ health was minimized due to the use of respirators and protective clothes. In order to minimize the impact on land, obsolete gas boilers were utilized according to relevant national norms, and waste was collected in separate containers with lids and recycled/disposed on the landfill after the works were finished. Fire safety was guaranteed by compliance with the state rules and regulations on the fire safety of construction and due to installation of the automatic fire alarm system and installation of fire hydrants inside and outside of Ukraine / Local Alternative Energy Solutions in Myrhorod – Reconstruction of a Gas Boiler House and Organization of a Biofuel Supply System in Myrhorod, Poltava Oblast

the straw packs storage facility. Impact on soil and vegetation was minimized due to the erosion control plan that included re-cultivation and site territory upgrading.

3. Site Closure Phase

The Capital Development Department of Poltava Oblast State Administration accepted the boiler house reconstruction works by signing a corresponding works acceptance certificate.

4. Activity Handover

The reconstructed boiler house on 8, Spartakivsky Prov. in Myrhorod is maintained by the Myrhorod Heating Company "Myrhorodteploenergo".

Sincerely,



\_\_\_\_\_  
Implementer Project Director/COP  
*Ruslan Tormosov*

November 30, 2015  
Date

Approved:



\_\_\_\_\_  
USAID/COR/AOR/Activity Manager  
*Maria Garastovskaya*

November 30, 2015  
Date

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