# 750 KV ZAPORIZKA – KAKHOVSKA TRANSMISSION LINE AND 330 KV TL DIVERSIONS PROJECT (ZAPORIZHZHA OBLAST, KHERSON OBLAST)

## DRAFT FINAL ESIA REPORT

## CHAPTER VIII – ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

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# 750 KV ZAPORIZKA – KAKHOVSKA TRANSMISSION LINE AND 330 KV TL DIVERSIONS PROJECT

# (ZAPORIZHZHA OBLAST, KHERSON OBLAST)

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**NOTE: This Chapter is an integral part of the Draft Final ESIA Report for this Project, and is not intended as a stand-alone document.**

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# VIII ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

Note: The technical description of the Project in this Draft ESIA Report is based on the current design stage, which is not yet finalised. Therefore, minor changes to the technical details as included in this Report may occur in the future. Any substantial changes will be reflected in the final version of this Report.

## 1. GENERAL ESMMP BACKGROUND

This section comprises the Environmental and Social Management and Monitoring Plan (ESMMP) for the ESIA for this Project. It summarises the organizational requirements, actions and monitoring plans to ensure that the necessary measures are taken by Ukrenergo to avoid potentially adverse effects - and maximise potential benefits - of the Project with respect to environmental, health and safety (H&S) and social aspects, and to operate In conformance with applicable laws and regulations of Ukraine, as well as the policies of international financial organizations[1] .

The specific ESMMP items are based on the Baseline Conditions and the Impact Assessment described in previous chapters, plus the results of discussions with Stakeholders and Ukrenergo.

The primary objective of the mitigation measures outlined previously and this ESMMP is to avoid negative impacts of the Project where possible, or otherwise to minimise the residual impacts to an acceptable level. Likewise, appropriate measures are suggested to maximise the potential for any benefits arising from the Project implementation.

The ESMMP takes a long-term view of the entire life-cycle of the Project and will continue to evolve in scope and depth within the four key stages of the project implementation:

- Final Planning-Design (preconstruction);
- Construction;
- Operation; and
- Decommissioning (including reinstatement).

The ESMMP consists of a combination of operational policies, procedures and practices. Overall responsibility for the ESMMP lies with Ukrenergo, whereby a number of the specific actions will be carried out by the third-party Contractors in the different stages. The Contractors' activities, however, will be supervised by Ukrenergo to ensure that the implementation by the Contractors is being performed as planned. These will be pointed out in a separate Contractors Management Plan.

[1] Of particular relevance is the EBRD 2008 Policy - Performance Requirement (PR) #1 regarding ESAPs (ESMMPs)

International Standards and guidelines relevant for the detailing of the ESMMP action items include, but are not limited to:

- IFC Performance Standards on Social and Environmental Sustainability, 2007, particularly Performance Standard 2 on Labour and Working Conditions;
- EBRD Environmental and Social Policy, 2008;
- ILO Best Practise Guide "*Safety and Health in Construction"* ILO-OSH (2001);
- Recommendation Concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases (ILO Recommendation 194).

The ESMMP is thus divided into two parts:

- The first part (Section 8.2) describes the ESMMP measures with respect to overall implementation and monitoring by Ukrenergo, including the organisational/review measures that Ukrenergo should undertake with respect to the Contractor works.
- The second part (in Section 8.3) includes the more specific action-mitigation items related to the various environmental and social topics described in Chapters 6 and 7 - these are spelled out in Table 8-1.

# 2. UKRENERGO MEASURES THROUGHOUT THE PROJECT

Ukrenergo will need to undertake a number of measures lasting throughout the Project to ensure successful implementation of the ESMMP[2]. For each topic, one or more "Key Performance Indicators" are given that will permit objective confirmation of the implementation of the measure.

## *2.1. ORGANISATIONAL CAPACITY*

Ukrenergo must establish and maintain an organisational structure that defines roles, responsibilities, and authority to implement the ESMMP described in this ESIA Report. This will include the following aspects:

- Designation of a Senior Manager with overall responsibility and one or more Managers with day-to-day responsibility for specific areas or stages of the ESMMP, including management of the various Contractors;
- Statement of commitment by Senior Management to devote the necessary human and financial resources on an ongoing basis throughout the Project to achieve effective and continuous conformance with the ESMMP;
- Communication of the commitment, roles and related responsibilities to the Ukrenergo Project teams and public/stakeholders Program of awareness and training of employees involved with the Project with respect to the social and environmental aspects of the Project and the specific relevant obligations under the ESMMP.

[2] Note: the "overall ESMMP items" described in this Section are in addition to and supplement the more detailed items listed in Table 8-1

Key Performance Indicators for Organisational Capacity:

- Publication of management commitment and delegation of roles and responsibilities on the Ukrenergo project web-site
- Written confirmation of in-house trainings of Project employees regarding social and environmental awareness and ESMMP implementation

## *2.2. CONTRACTOR MANAGEMENT PLAN*

Whilst Ukrenergo has overall responsibility for the Project and implementation of the ESMMP, much of the work will be done by various contractors engaged by Ukrenergo. These include design firms, surveyors, and permitting specialists in the Planning Stage and especially the main Construction Contractor during the Construction Stage and later Commissioning Stage. Thus it is important for Ukrenergo to implement procedures in a Contractor Management Plan to ensure that the Contractors are fully aware of the relevant ESMMP issues and similarly committed as is Ukrenergo to the successful implementation of the ESMMP.

The main components of the Contractor Management Plan will include:

- Designation of senior Ukrenergo managers responsible for the Contractor Management Plan (or portions thereof, as relevant for the Project Stages);
- Training and awareness sessions for the responsible persons in the Ukrenergo Contracting/Procurement Department regarding the ESMMP requirements for Contractors;
- The specific relevant ESMMP provisions (including requirements regarding occupational health and safety) will be included into tender documents as appropriate for the tendered services;
- The bidding contractors' capacity to meet the ESMMP requirements (i.e. sufficient skills and experience) will be screened and included in the award-decision criteria;
- Each contract will include requirements regarding the relevant environmental and social risks and ESMMP requirements associated with the contract activities and will include appropriate non-compliance remedies. Plus contracts will include requirements that in the case of sub-contracting, the subcontractors will be subject to similar obligations as the main contractor;
- The contractor will be obliged to provide all necessary skilled and trained EHS staff to ensure that all activities are carried out in accordance with the EHS regulations, and guidelines of Ukraine and international best practice (such as EBRD Performance Requirement 2 on Labour and Working Conditions). Potential risks at work places have to be assessed, like chemicals, mechanical and electrical risks, working at heights, confined space, hot work;
- The contractor will have to demonstrate the appropriate skills, qualification and/or working experience of his staff and subcontractors to the Supervisor (at Ukrenergo). Construction workforce and sub-contractors will receive comprehensive H&S training at the beginning of an appointment, thereafter on a regular basis throughout the entire construction period. Special safety instructions will be provided for temporary workforce and for young workforce;

- In the event that foreign firms are contracted and significant numbers of foreign workers will be involved in the Project, special attention will be given to ensure that all Ukrainian and international labour laws and regulations (e.g. ILO core labour standards such as respect to child labour, working hours, overtime compensation, etc) are complied with;

- Ukrenergo will routinely monitor the performance of the contractors with respect to ESMMP requirements (see also Part C. Annual ESMMP Performance Monitoring, below).

Standards and guidelines relevant for the detailing of the ESMMP action items include, but are not limited to:

- EBRD Environmental and Social Policy, 2008
- ILO Best Practise Guide "*Safety and Health in Construction"* ILO-OSH (2001)
- Recommendation Concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases (ILO Recommendation 194)
- Labour Code of the Ukraine
- other relevant legislation of Ukraine
- EHS Guidelines for Electric Power Transmission and Distribution (IFC, 2007)

Key Performance Indicators for Contractor Management:

- Publication of delegation of roles and responsibilities on the Ukrenergo project web-site regarding Contractor Management (can be integrated with actions regarding Organisational Capacity)
- Written confirmation of in-house trainings of Contracts-Procurement specialists regarding ESMMP implementation
- Written examples of tender specs and contracts with specific reference to and requirements for ESMMP topics.
- Inclusion of contractor ESMMP performance in the ESMMP Audits

## *2.3. ANNUAL ESMMP PERFORMANCE MONITORING AND REPORTING*

The Project is considered by the EBRD as a "Category A" Project, and thus Ukrenergo will be obliged to retain qualified specialists to undertake periodic monitoring/audits throughout the period of EBRD involvement with the Project. Based upon previous project experience an initial ESMMP Audit should take place within six months of the start of each new Project Stage (Planning, Construction, Operation & Maintenance, Decommissioning), and based on the results, the subsequent audit schedule can be agreed, but must be conducted at least annually.

The ESMMP Audit results must be documented and forwarded for review to the senior responsible persons at Ukrenergo and the EBRD; also, in accordance with

EBRD policy on Information Disclosure[3] the Audit results must be disclosed to the relevant parties/stakeholders affected by the ESMMP.

The ESMMP Audit Reports shall cover the status of EHS-related aspects like permits, status of compliance with obligations arising from such licences or permits, exceedings of regulatory environmental standards with root cause analysis, corrective measures, as well as conformance with the ESMMP. The Audits must address the performance of both Ukrenergo and any Contractors or Subcontractors.

Depending on the findings, it may be necessary to revise the original ESMMP to better reflect the changing situation with the Project implementation, and/or the social, environmental or regulatory framework conditions.

Key Performance Indicators for ESMMP Monitoring:

- Engagement of a qualified external expert to undertake the initial and periodic ESMMP Audits
- Submittal to EBRD of initial ESMMP Audit Report after about six months from ESIA Report finalisation; thereafter (at least) annual ESMMP Audit Reports, and distribution to affected stakeholders, e.g. by publication on the Ukrenergo project web-site

## *2.4. COMMUNICATION AND GRIEVANCE PROCEDURE*

Ukrenergo will develop and implement a *Public Communication Program* to provide ongoing information to the affected Stakeholders and general public about the key relevant environmental and social aspects throughout the future Project execution (including construction and operation). This Program will build upon the Stakeholder engagement process and Stakeholder Engagement Plan (SEP) already established as part of this ESIA Report. The basis for this Program will be outlined on the Ukrenergo project website, supplemented with use of mass media, bulletins, brochures, emails, direct mailings and other communication forms (as was done during the PCDP/SEP actions) to reach the affected Stakeholders. The main actions of the *Public Communication Program* are described in the following:

Of particular relevance will be the timely and appropriate provision of information to the local villages and land users prior to and during the local construction activities (whether directly by Ukrenergo and/or through the Construction Contractors).

- At a minimum, Ukrenergo will provide information on an annual basis to the local villages to keep them abreast of the Project schedule and when/where which activities are planned.
- Specific information will also be provided on adhoc basis should there be significant changes in the Project planning that may strongly affect certain Stakeholders, e.g. local re-alignment of the route, or revisions in local construction schedule.

[3] EBRD 2008 Policy - PR 10

Ukrenergo will also maintain an information "hotline" via telephone, mail and email to facilitate communication with the public and Stakeholders. As of this present stage of the Project, Ukrenergo has designated Mr. A.N. Shvidkyi, First Deputy Director of Southern Electric Power System – Ukrenergo, as the "Public Liaison Officer" and thus also responsible for project communication. Contact details of Mr Shvidkyi are given in the PCDP/SEP. These contact details and hotline information will be distributed widely throughout the Project area and posted on the Ukrenergo Website.

This provision of information will be coupled with the availability to the Stakeholders of the Grievance Procedure, as already begun to be implemented as part of the ESIA process (as described in the PCDP/SEP).

The Grievance Procedure (sometimes also called Grievance Mechanism), provides Stakeholders a way to formally register any complaints/ grievances to Ukrenergo about any part of the process of the Project implementation (incl. construction and operation). Examples of Grievance issues may include items such as:

- Damage to crops during tower construction;
- Unexpected corona noises during TL operations.

As Public Liaison Officer, Mr Shvidki is presently also responsible for handling of grievances. The Grievance Procedure will be updated as appropriate during the course of the Project and subsequent operational stage. The Construction Contractor will also be required to implement a "Quick Response" procedure to react as efficiently and directly as possible to urgent Stakeholder concerns in the field; i.e. without necessarily having to first go through the formal Grievance process with Ukrenergo.

Should the need arise, Ukrenergo will consider the establishment of a conflict resolution "committee" (comprising Ukrenergo representatives, village council representatives, and other persons as appropriate) for the management of complex grievance issues. The intent of the Grievance Procedures and the conflict resolution committee will be to quickly and effectively respond to Stakeholder and public concerns on a direct basis, thus avoiding the need for escalation of the issue to the administrative-judicial bodies[4].

Grievance statements may be provided via letter, email, fax, or telephone call. Grievances will in general be responded to within 1 month after receipt according to the Law of Ukraine on Citizens' Appeals.

Ukrenergo will maintain a log of grievances received and the manner in which the issues have been handled.

A summary of the Grievance issues will be included in the annual reporting of project implementation on the Project Website, whilst maintaining the confidentiality of individual persons/Stakeholders involved.

[4] Nevertheless, these Procedures do not replace or impede the right of the Stakeholders to seek formal redress.

Key Performance Indicators for Communication and Grievance Procedures:

- The Public Communication Program, including Grievance Procedure, is elaborated and posted on the Ukrenergo Website.
- A "Quick Response" procedure has been agreed with the Contractor to be able to respond directly to urgent issues in the field, and this is published on the Ukrenergo Website.
- Local villagers/Stakeholders are aware of the Project and in particular the planned schedule of activities most likely to affect them (e.g. local construction dates).
- The Annual Reports are posted on the Ukrenergo Website regarding progress of the Program and update/results of the Grievance Procedures.

# 3. SPECIFIC MITIGATION ITEMS

The specific recommended mitigation measures for each Stage of the Project are spelled out in Table 8-1. For each item the following information is provided:

- Key activities/aspects (which results in a potential impact);
- Potential significant impacts of the activities (negative impact, unless stated otherwise);
- Recommended avoidance/mitigation measures, including a qualitative indication of implementation timing, where applicable;
- Key Performance Indicators (to show/confirm the mitigation measures are implemented); and
- The extent of any residual impacts (even if the avoidance/mitigation measures are implemented as planned).

Each of the described measures is based on the information gathered in the Baseline Assessment and the evaluation of impacts described in previous Chapters.

## Table 8-1 Environmental and Social Management and Monitoring Plan (ESMMP)

**General Notes**:

Any plan or procedure/work instruction listed in the following will be based on the contractual provisions specified by Ukrenergo with the Construction Contractor and other third parties and requires approval by Ukrenergo before implementation. Implementation Supervision will be provided by Ukrenergo and oversight by the Lenders and their advisors. Plans and measures are subject to revision for performance improvement if monitoring reveals weaknesses in implementation. Action item implementation will be benchmarked against key performance indicators. All activities related to construction and operation will also be subject to inspection by the responsible Ukrainian authorities and regular monitoring visits by the Lender's environmental and social specialists.

### I. PLANNING-DESIGN STAGE

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| **P1** | 6.3 | **Minimum clearance height of the line at the Dnieper Crossing and flood aspects at tower locations nearby (navigable water)** | Impact on shipment activities on Dnieper river | In the detailed planning stage:<br>▪ Confirm the minimum height of the lines at the Dnieper crossing with relevant authorities<br>▪ Confirm tower locations as to effect on water flow in case of flooding with relevant authorities | Ukrenergo/Planner<br>In agreement with relevant authorities (e.g. shipment authorities) | Correspondence with relevant authorities showing agreement with planned height conditions and tower locations near Dnieper crossing | Minor |
| **P2** | 6.6 | **Crossing of surface waters** | Potential for bird collision | In the detailed planning stage:<br>▪ Confirm water crossings<br>▪ Reduce bird collision risk through installation of bird marker on the earth wire of the new TL at the surface water crossing up | Ukrenergo | Make bird markers part of terms of reference for construction.<br>Audit TL after construction whether markers installed correctly. | Bird collision risk reduced by 80% (according to various investigations in western Europe) |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | to a distance of 3 km<br>▪ Installation of markers in 20 m intervals, at the water crossing at 10 m intervals<br>▪ In case of bundling with existing TL while crossing surface water, also installation of markers on existing TL. | | | |
| **P3** | 6.5 | **Planning of construction activities at**<br><br>**- Dnieper crossing before construction**<br><br>**- further sensitive areas (IBA Kajiry and IBA Energodar) before construction** | Disturbance of birds during construction | In the detailed planning stage<br>▪ Construction time outside breeding period from April to July<br>In addition the following for the Dnieper crossing:<br>▪ perform bird survey comprising complete annual cycle, incl. breeding, migration and wintering periods<br>▪ determine time period for construction with the least impact also considering migration/wintering time based on survey<br>▪ determine additional measures (such as calming of areas, hunting restrictions) to enable affected species to evade from construction sites. | Ukrenergo/Consultant | Appropriate scheduling of construction, particular focus on construction time at southern shore of the Dnieper river<br><br>Successful implementation of additional measures (such as calming of Dnieper construction site)<br><br>Monitor scheme during construction activities (see below construction) | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| **P4** | 6.5, 6.8 | **Vodyanski Sands: Planned 750 kV route crosses a designated protected area in bundling with two existing 750 kV lines** | Impact on flora/fauna/ habitats of designated protected area<br><br>Crossing of protected area involving construction activities | ▪ Prepare final detailed design to include mitigation measures based on the public consultation and agreement with the competent authorities to ensure compliance with applicable Ukrainian legislation.<br>▪ | Ukrenergo | Agreement with competent authorities accepting current planned routing in bundling with existing 750 kV lines through protected area and in compliance with regulatory requirements<br><br>Ukrenergo to provide to the Lenders and interested stakeholders correspondence showing agreement with authorities<br><br>Design the route in compliance with Ukrainian legislation if no agreement with the authorities can be obtained. | Minor |
| **P5a** | 6.5, 6.8 | **Urochysche Bilozirske:: Planned 750 kV route potentially crosses designated protected area** | Impact on flora/fauna/ habitats of designated protected area<br><br>Potential crossing of protected area involving construction activities in this | ▪ Confirm with authorities the boundaries of protected area<br>▪ Where a protected area is crossed by current TL routing, consider design of mitigation measures that will ensure compliance with National laws and limit environmental impacts. This may include the review of the line | Ukrenergo | Final detailed design of the route includes mitigation based on the public consultation and agreements with the competent authorities to ensure compliance with applicable Ukrainian legislation.Ukrenergo to publish summary of mitigation measure agreed with local | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | area | design e.g. higher towers to limit impact<br>▪ Obtain agreement with competent authority to agree on the route<br>▪ Install bird markers as appropriate, e.g. if final routing involves crossing of surface water or bird flight paths (see item P2) | | authorities<br><br>Ukrenego to provide to the Lenders and interested stakeholders correspondence showing agreement with authorities | |
| **P5b** | 6.5, 6.8 | **Kairska Balka: Planned 750 kV route potentially crosses designated protected area (assumed to be in Important Bird Area, IBA)** | Impact on flora/fauna/ habitats of designated protected area<br><br>Potential crossing of protected area involving construction activities | ▪ Confirm with authorities the boundaries of the protected area / IBA<br>▪ Perform bird survey in cooperation with local bird experts (e.g. BirdLife Association) comprising two complete annual cycles, incl. breeding, migration and wintering periods to collect further data (*bird survey see also item P3*)<br>▪ Re-evaluate the impact on birds based on additional information and mitigation measures (including Installation of bird markers/diverters);<br>▪ Submit re-evaluation report to the EBRD for agreement | Ukrenergo/Consultant | Final detailed design includes mitigation based on the public consultation and agreements with the competent authorities to ensure compliance with Ukrainian legislation<br><br>Ukrenergo to publish summary of mitigation measure agreed with local authorities<br><br>Ukrenergo to provide to Lenders and interested stakeholders correspondence showing agreement with authorities | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | ▪ Optimize design, if needed, based on additional studies;<br>▪ Prepare final detailed design to include mitigation measures based on the public consultation and agreement with the competent authorities to ensure compliance with applicable Ukrainian legislation. | | | |
| **P6** | 6.5, 6.8 | **Kakhovka substation and routing of 750 kV line and 330 kV diversions is located near existing protected area (Korsunsky forest area) and planned nature national park (Oleshkivski sands)** | Potential impact on flora/fauna/ habitats of designated protected area | ▪ Agree with competent authorities (local/regional/national) on currently planned location of Kakhovka substation and routing of lines; | Ukrenergo | Agreement with competent authorities accepting currently planned locations and line routing near (planned) protected areas and in compliance with regulatory requirements<br><br>Correspondence showing agreement with authorities | Minor |
| **P7** | 6.5 | **330kV Diversion Kakhovka-Kherson crossing a flood plain area and the Dnieper River near Lvovo/ Korsunske** | High risk for bird collision since Dniepr is main migration route between several Important Bird | ▪ Perform bird survey in cooperation with local and recognized ornithological experts comprising two complete annual cycles, incl. breeding, migration and wintering periods to | Ukrenergo, planner, consultants | Documentation on bird survey<br><br>Report on re-evaluation report of bird impact | Moderate |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | Areas.<br><br>Crossing of planned National Park planned at Dniepr River in Kakhovske water reservoir by 2010/2011 | collect further data (*bird survey see also item P3*)<br>▪ Re-evaluate the impact on birds based on additional information, consider aspects of future development (e.g. extension of 750 kV line along the southern backbone system) and mitigation measures in the re-evaluation (incl. bird markers/diverters also at other existing power lines crossing the Dniepr);<br>▪ Submit re-evaluation report to Lenders for agreement<br>▪ Optimize design, if needed based on additional studies;<br>▪ Agree with authorities, stakeholders on final design;<br>▪ If required perform study of additional mitigation measures to allow an appropriate design that is agreeable to authorities and stakeholders and is based on the most optimal technical, economic and environmental solution.<br>▪ Install bird markers at line | | Final detailed design of the crossing includes mitigation measures based on the public consultation and agreements with the stakeholders and competent authorities. | |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | where the line crosses surface waters and is near sensitive bird areas (see item P2) | | | |
| **P8** | 6.5 | **Coordination/operation in vicinity of breeding areas - local bird situation not reflected adequately in present planning** | Disturbance of breeding population during construction<br><br>Dissecting habitats of species preferring open landscapes (such as geese, bustards) | ▪ Identify breeding populations known to local bird experts<br>▪ Identify significant populations of bird species in open landscapes (e.g. geese, bustards)<br>▪ If needed, apply bird markers to transmission line in affected areas | Ukrenergo/Consultant | Documentation of detailed planning showing breeding areas and line sections where markers are applied | Minor |
| **P9** | 6.7 | **Land acquisition for towers** | Loss of land value to owner/user through permanent land withdrawal | During the pre-construction phase:<br><br>Develop a Land Acquisition Plan (LAP) including:<br>▪ List of all affected landowners and advance information of intended land withdrawal<br>▪ Compensation based on either replacement with other plot or fair market price of the plot at the time of withdrawal<br>▪ Involving professional | Ukrenergo (LAP and valuation)<br><br>Compensation-entitlement process managed by Ukrenergo as part of Compensation Commission | An LAP exists<br><br>Documentation on publication in mass media on planned construction start<br><br>Documents that show each land owner/user has been duly informed and their consent obtained, approvals of local and state authorities and/or Compensation Commissions<br><br>Valuation report and | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | licensed land valuators and the Compensation Commissions<br>▪ Address various types of land owners/land users for compensation: (1) Private owners working own land (2) Private owners renting their land to others (3) Entrepreneurs working on private or village reserve lands: (4) Village councils holding land<br>▪ Conform to Ukraine Land Code and other relevant regulations, and EBRD PR5 | | compensation schedules for each land owner and land user<br>. | |
| **P10** | 6.1, 6.6, 6.7 | **Private properties temporarily used for access roads, construction work/assembly of towers, unwinding of cables, construction camps, etc.** | Temporary loss of agricultural land use and physical damage to crops and land, limited access to fields, etc resulting in reduced yield/harvest and thus reduced income/earnings. | Prior to start of construction:<br>Prepare as part of the *Construction Plan*<br>▪ Careful plan of access roads and construction site layouts and timing to ensure minimum damage-footprint (e.g. by using existing roads and pathways as far as possible, work outside harvest season)<br>▪ List of all landowners/users who will be affected by construction activities | Ukrenergo Designers and Construction Contractor | Written construction Plan showing layout and schedule of works, list of affected landowners, confirmation that landowners are notified of pending works.<br>Short-term lease agreements signed by all landowners<br>Long-term easement agreements signed with land-owners along the route | Minor, temporary |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | Notify affected owners and users of land plots near about the construction through mass-media one year before the construction starts<br>▪ Sign short term lease agreements with the affected owners, including information about the compensation-entitlement process.<br>▪ Sign long-term agreements for easements to access TLs for maintenance during operational stage | | | |
| **P11** | 6.6 | **Transmission Line route potentially overlaps with operating areas of existing moving sprinkler- irrigation facilities** | Interference with the sprinkler operations due to physical blockage by TL towers and restriction s of SPZ, resulting in reduced yield and income for the farmers | During detailed planning/design:<br>▪ Confirm which/if any sprinkler systems are affected;<br>▪ Determine if local shifting of towers and/or sprinkler systems is possible to avoid overlap;<br>▪ If needed, provide one-time fair-value compensation to farmers for reconfiguration of irrigation system as per the Compensation-Entitlement Process | Ukrenergo/Planner | Final routing provides for sufficient clearance for irrigation facilities and/or evidence of compensation paid to the farmers | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| **P12** | | **Clearance of areas for preparation of TL corridor and tower locations** | Loss of trees along the route | During detailed planning/design:<br>As part of the Construction Plan<br>▪ Identify number of trees to be cut in corridor as part of the Construction Plan and the respective land owners<br>▪ Establish adequate compensation as per Entitlement Plan, preferably via replacement of ecological value of lost trees by planting same tree species at comparable location<br>▪ Ensure tree cutting measures are minimised during periods of wildlife nesting and breeding in the forests | Ukrenergo / planner/Construction Contractor | Construction Plan shows trees to be cut, timing and landowners;<br>Compensation is made to tree owners | Minor |
| **P13** | 6.7, 6.9 | **EMR emissions from TLs** | Health effects on humans if TLs too close to homes and other occupied buildings | ▪ Ensure adequate sanitary protection zone will be established<br>▪ Verify distance of objects and object clusters identified as part of this assessment (see List of Annex 6-2) and possibly others from the alignment once survey of tower locations has been finalized (expected to be in July | Ukrenergo / planner | Final approved routing provides minimum buffer-distance (250 m minimum distance from settlement to 750 kV line) or 40 m for SPZ of 750 kV, 20m for SPZ to 330 kV)<br>Documentation that occupants / owners of | Minor, temporary |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
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| | | | | 2009).<br>If any of these objects are situated within 250 m zone of the 750 kV line there will be taken the relevant decision according to the Ukrainian legislation. | | houses were contacted and use of housing was verified to be not residential in case settlements or houses are located within the 250 m zone or SPZ (based on Annex 6.2, and possibly others).<br>Compensation is paid for any relocation needed. | |
| **P14** | 6.11 | **TL potentially too close to archaeological, cultural heritage or designated recreation sites** | Visual disturbance of esthetical value of these sites, violation of laws on protection of cultural-historical monuments<br><br>Physical damage to suspected buried objects | ▪ Further evaluation of the site to determine exact location of archaeological sites near the route; agreement with authorities on adequate buffer-distance to TL; potential need for micro-detour of the TL route at this location | Ukrenergo | Letter of confirmation by the authorities that the final routing plans of the TL, and especially the tower locations, will not negatively affect any known or suspected historical site | Minor |
| **P15** | 6.12 | **Cumulative effect through creation of "islands" (i.e. a relatively small land area is surrounded by various transmission lines or roads visible in** | Deterioration of connectivity and access through enclosure of housing (e.g. farms, stables etc.) through infrastructure | ▪ Based on the current stage of planning, there appear to be only one case of such islands in the Project Area, involving two adjacent farms south of Kakhovka that are bordered by the new 750 | Ukrenergo / planner | Documentation that alternatives were evaluated to avoid "islands"<br><br>Final approved alignment allows "islands" within routing only if no | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | **most/all directions)** | lines from different sides | kV TL, an existing 330 kV line and a railway<br>▪ Where island effect is identified, evaluate if additional mitigation measures are economically, environmentally and socially feasible. | | alternative is reasonable | |

## II. CONSTRUCTION STAGE

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| **C1** | 6.1, 6.2, 6.3, 6.4 | **Environmental, Performance of construction activities / Good Practice** | Potential spills or soil/surface water/groundwater contamination during construction, potential soil erosion/compaction during earthworks, air impact from dust, potential damages on lands through construction traffic | • *Construction Site Management Plan including sub-plans:*<br>- *Spill Prevention and Contingency Plan*;<br>- *Soil Handling and Storage Plan (incl*. measure how to pile earth, restore of earth after foundation works etc.)<br>- *Materials Handling and Storage Instructions*<br>- *Hazardous Material Handling Plan* (incl. international labelling system) | Setup by construction contractor prior to construction; implementation throughout construction under supervision of Ukrenergo. | Construction contractor's Site Manager and EHS-Responsibles in place;<br><br>Construction site management plan and sub-plans including work instructions for environmental aspects in place and implementation monitored; | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | - *Construction Waste Management Plan*;<br>- *Vegetation management plan - Minimizing the cutting of ecologically valuable tree/bush vegetation near fields/canals at and near construction areas*<br>- *Construction Site Closure Plan*;<br>- *Plan for dealing with cutting trees/ecological*<br>• *Designated Construction's Site Manager and EHS-Responsibles* | | Internal auditing and reporting by contractor;<br><br>Verification of training, trainings completed (written logs) | |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| **C2** | 6.5 | **Construction activities according to the pre-planned time schedule at**<br><br>**- Dnieper crossing before construction**<br><br>**- further sensitive areas (IBA Kajiry and IBA Energodar) before construction** | Disturbance of birds during construction. | ▪ Adhere to the designated construction periods (outside breeding period from April to July)<br><br>In addition the following for the Dnieper crossing:<br><br>▪ Adhere to the designated construction periods determined based on the bird survey<br>▪ Implement all additional measures identified (e.g. calming of certain areas as determined in the bird survey) | Ukrenergo<br><br>Construction Contractor | Monthly status report showing sections where construction activities were carried out over the last and where those are planned in the upcoming month<br><br>Monthly inspections of construction work to monitor conformance with construction time schedule and no violations | Minor |
| **C3** | 6.7 | **Private properties temporarily used for access roads, construction work/assembly of towers, unwinding of cables, construction camps, etc.** | Temporary loss of agricultural land use and physical damage to crops and land, restricted access to fields, etc resulting in reduced yield/harvest and thus reduced income/earnings. | Implement the mitigative measures described in the C*onstruction Plan* (see Action Items in Planning Stage).<br>▪ Kickoff Training of all work crews re awareness to minimizing damages and impacts to landusers<br>▪ Conduct routine monitoring/inspection of construction sites to ensure conformance with Construction Plan, e.g. measures to minimize damage-footprint, and site cleanups | Ukrenergo<br><br>Construction contractor | Protocols of Kickoff training to work crews<br><br>Protocols of routine inspections of construction works and site restoration<br><br>Photos and documents demonstrating baseline facts on land damage<br><br>Compensation is paid damage/loss of earning incurred during the construction phase | Minor-Moderate |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | ▪ After construction works are completed, conduct cleanup and restoration of site. Agree with landowner on extent of land damages incurred as basis for compensation process.<br>▪ Ukrenergo to provide feedback to Contractor re any improvement issues for implementing the Construction Plan<br>▪ Ensure compensation procedure is implemented for temporary damages/losses during construction<br>▪ Ensure grievance procedure is functioning | | Evidence of calls or letters as part of grievance process | |
| **C4** | 6.7 | **Traffic movements, pile driving for construction of the foundations of towers** | Impact from noise, dust and traffic fumes | *Management procedure* to:<br>▪ ensure traffic is restricted to specific, clearly-defined access roads<br>▪ limit traffic movements outside normal working hours.<br>▪ Reduce risk of dust impact by choosing to work not in summer months (especially where heavy traffic is moving along dirt roads)<br>▪ Possibly control by using water spraying from bowsers (but: risk roads getting slippery) | Ukrenergo/construction contractor | *Management procedure* as part of Construction program | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | Design for local re-routing in compliance with Ukrainian legislation should no agreement with the authorities be obtained. and transport speed limits control. | | | |
| **C5** | 6.7 | **Presence of an outside workforce** | Potential for conflict if much of the workforce is brought from outside and is housed in a temporary construction camp or camps near the work sites (e.g. disputes with local people and possibly the presence of bars and prostitutes, leading to a risk of altercations, accidents, increase in sexually transmitted diseases etc.) | ▪ Minimize use of outside workforce, hire local employees as far as possible (for less specialized work) who can live at home<br>▪ Minimize negative impact to small villages by providing housing to workforce in larger towns and transporting them to the construction site on a daily basis | Construction contractor | Adequate requirements to be included in tender document fro construction company | Moderate |
| **C6** | 6.9 | **Construction Health and Safety** | Occupational risks of accidents during construction (e.g. falling from heights, handling of heavy materials etc.) | • *Construction Health and Safety Plan*, inter alia including provisions for:<br>- workplace risk-assessments, personal protective equipment (PPE, fall protection)<br>- construction workers training | Setup by construction contractor before construction;<br>Implementation by construction contractor throughout construction under supervision of | • Work Place Risk assessment undertaken before start of operations;<br>• Health ad Safety Plans and plan for emergency preparedness in place | Moderate |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | and awareness<br>- working at great heights and confined spaces<br>- construction traffic safety (see below)<br>- addressing public health and safety, noise, vibration and dust.<br>• *Emergency Preparedness Plan* for accidents response | Ukrenergo.<br>(in coordination with relevant agencies | and implemented;<br>• HSE Instructions and PPE available | |
| **C7** | 6.9 | **Construction traffic safety on-site and off-site** | Traffic accidents on- and offsite affecting health and safety of public and workers and local properties | • *Construction Traffic Management Plan:*<br>Transport traffic routing (oversize loads, peak delivery traffic etc.)<br>Instruction of construction workforce and permanent Ukrenergo workforce (e.g. speed limits, no alcohol etc)<br>Information of local communities<br>Instruction of contractors (e.g. drivers, suppliers)<br>Training of drivers on safe driving; posting speed limit signs, advance warning to villages of pending construction activities. Safety alerts-awareness training. First-aid/rescue plan coordinated with local authorities/clinics. | Setup by construction contractor before start of works in coordination with Ukrenergo; Implementation by construction contractor throughout construction; supervision of implementation by Ukrenergo. | Plan in place and communicated<br>Recording of violations and corrective measures<br>Monthly reports by construction contractor<br>Supervision by Ukrenergo (check of reports)<br>Instruction and information events for workforce performed (construction workforce, permanent Ukrenergo workforce); number of participants (target = 100%)<br>Information events for local communities performed, number of participants<br>Instruction and information events for | Minor |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | Compensation payments for valid claims | | contractors performed (target = 100% participation)<br>Number of accidents (target = 0)<br>Number of grievances (target = 0)<br>Documentation on trainings completed (written logs).<br>Grievance procedure in place. Compensation paid | |
| **C8** | 6.11 | **Construction of towers and access roads** | Impact on archaeological objects | *Management procedure*<br>- Awareness training for construction staff for identification and dealing with potentially archaeological findings<br>In case potential archaeological objects are found:<br>- Stoppage of construction<br>- Contacting of representatives of the competent authority.<br>- Determining scope of monument protection measures pursuant to the effective legislation | Setup by construction contractor before construction;<br>Implementation by construction contractor throughout construction under supervision of Ukrenergo.<br>Coordination with relevant agencies, in case archaeological objects are found | Management procedure is part of the Constructors management plan<br>Documentation on training materials and participation of trainings<br>Chance finds reports by construction contractor (monthly status)<br>Documentation on involvement of authorities | Minor |

## III. OPERATION STAGE

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| **O1** | 6.5 | **Repair and maintenance of TL** | Destruction/loss of bird markers | • Regular control whether bird markers are still in place<br>• Re-Installation of lost markers | Ukrenergo | Annual control of bird marker during regular TL maintenance, replacement if needed | minor |
| **O2** | 6.6, 6.7 | **Transmission lines crossing private/communal land** | Potential restrictions of land use | • Sign contracts for easement with land owners whose land is situated in the protection zones of the transmission lines in case of repair or emergency works | Ukrenergo | Signed easement contracts with above land owners | minor |
| **O3** | 6.7 | **Motor vehicles used to access towers during repair and maintenance of the TL** | Damage to crops and local property by the vehicles | • Training of drivers on safe driving; posting speed limit signs,<br>Compensation payments for valid claims, case by case decision on compensation as per the Compensation-Entitlement Procedure | Ukrenergo | Compensation paid for loss of income/damage to crops or local property | minor |
| **O4** | 6.9 | **EMR emissions from TLs** | Health effects on humans if norms exceeded on working times within the SPZ | • Distribute info brochures on EMR safety-maximum working times to all land users along TLs annually<br>• Information of local public by newspaper and radio once a year on key H&S issues: status of current research (if any new), safe exposure times for | Ukrenergo | Brochures are received and understood by land users; warning signs exist and are legible, periodic inspections to check conformance with norms.<br>Training to employees to hold H&S briefings/awareness training | Minor, temporary |

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| | | | | adults working beneath the lines, information that children should be kept out of sanitary protection zone (no work for children under 18), risks from climbing the towers, electrocution (e.g. by trying to steal equipment), tower toppling in case nuts and bolts are stolen (nuts and bolts below level of 10m to be welded).<br><br>Personnel employed for maintenance of power lines should raise awareness of population regarding safe behaviour near power lines (e.g. H&S briefings for involved workers). | | | |

## IV. DECOMMISSIONING STAGE

| Action Item # | Chapter/ Section | Activity/Aspect | Potential Impact | Mitigation / Management | Responsibility / Implementation | Monitoring / Key Performance indicators | Residual Impacts |
|---|---|---|---|---|---|---|---|
| **D1** | 7. | **Demolition and removal of equipment and line structure in future (expected life of TL is about 50 years)** | Pollution to soil and water, exposure of workers to toxic substances due to improper handling and disposal | The Dismantling Contractor will be obliged to prepare a Construction Plan that includes relevant provisions in line with applicable future regulations, e.g.<br>• Ensure hazardous material is separated and disposed of as legally required<br>• Separate other waste streams and dispose of/recycle as legally required | Ukrenergo<br>Dismantling Contractor | Written Decommissioning management plan | Minor |
| **D2** | | **Demolition and removal of equipment and line structure in future (expected life of TL is about 50 years)** | Impacts are similar to Construction Impacts as previously described above, e.g. temporary damage to soils, crops, loss of income, etc<br><br>Long-term impact will possibly be a re-naturalised environment | The Dismantling Contractor will be obliged to prepare a Construction Plan that includes relevant provisions in line with applicable future regulations, e.g.<br>• Optimise procedures and timing to minimise impacts to landowners/users;<br>• Compensation paid to affected persons, etc.<br>• Restoration of impacted land areas | Ukrenergo<br>Dismantling Contractor | Written Decommissioning management plan<br><br>Compensation paid as agreed<br><br>Evidence of restored lands | Presumably the net affect of the restored lands will overall be POSITIVE |