



# **Modus Ukraine solar project**

Non-Technical Summary

14 June 2019



Mott MacDonald  
Victory House  
Trafalgar Place  
Brighton BN1 4FY  
United Kingdom

T +44 (0)1273 365000  
F +44 (0)1273 365100  
mottmac.com

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# 1 Introduction

## 1.1 Overview

This non-technical summary (NTS) presents the main findings of the assessment of environmental and social impacts of the 33.4MWp (megawatt peak) Bolohyvsy Solar Park 1 (BSP1) and Bolohyvsy Solar Park 2 (BSP2) (together the 'project') acquired by Modus Energy International B.V. (the Sponsor), and located in Zhytomir Oblast, in the west of Ukraine. The NTS is informed by the environmental impact assessment (EIA) undertaken to satisfy Ukrainian regulatory requirements, and a subsequent environmental and social due diligence assessment for project financing.

## 1.2 Who is developing the project?

Originally the project was developed in 2013 by Teslanergo (a Ukrainian independent power producer) and was later purchased by the Sponsor in 2018. The Sponsor will retain Teslanergo as project supervisor for the duration of construction activities.

Electrum Sp.O.o has been appointed as engineering, procurement and construction (EPC) contractor for the construction of both plants simultaneously

## 1.3 Who is financing the project?

The European Bank for Reconstruction and Development (EBRD) is considering providing a loan to the project. EBRD is owned by 67 countries, as well as the European Union and the European Investment Bank. EBRD provides financial support for various types of projects, including but not limited to energy, agribusiness, infrastructure, and transport sectors.

## 1.4 What is the project categorisation?

The project is considered to be a Category B project under EBRD Environmental and Social Risk Categorisation List - Revised 2014, and the EBRD Environmental and Social Policy (ESP) 2014, where potential adverse future environmental and social impacts are typically site specific and/or readily identified and addressed through mitigation measures.

## 1.5 Stakeholder engagement

A public hearing was conducted on 30 July 2013 in Yurivka village community hall. It was attended by 45 community members and chaired by the village chairman. Among those present were Oleg Gromatenko (director) and Olexander Puchalsky (project coordinator). Additionally, the head of district administration, deputy head of Zhytomir regional administration and deputy head of land agency for Lyubar district attended.

During the meeting, the location of renewable energy facilities within the territory of Yurivka village council (beyond the boundaries of Yurivka settlement) was discussed. A representative from BSP1/BSP2 provided summary information about the proposed project to community members and the regional and local administrations.

A stakeholder engagement plan, in line with EBRD Performance Requirement 10 (PR10) for Information Disclosure and Stakeholder Engagement of category B projects is being developed in addition to the environmental and social impact assessment summarised in this document, as part of the EBRD disclosure package.

## 2 The Modus solar project

### 2.1 What is the project?

A solar power plant generates electricity through the photovoltaic (PV) effect in which the energy from light (produced by the sun) is converted to electricity. The solar cells that make up the solar panel produce a direct current when the photons of light hit the panels. The direct current is then converted through an inverter into an alternating current that can be used and exported to the electrical grid.

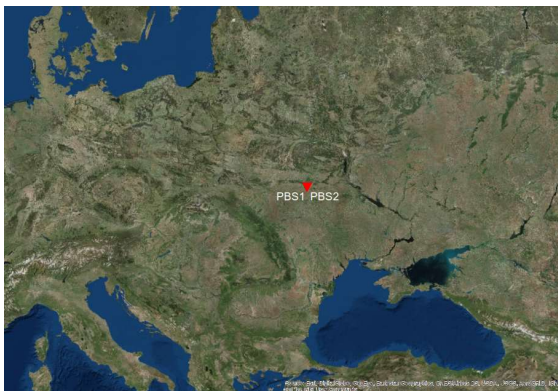
The PV plants BSP1 and BSP2 have been designed within an aggregated area of 68 hectares (Ha) with 33.4MWp/28MWac (megawatt alternating current) in total. The technology selected for the main equipment is: polycrystalline PV modules, string inverters and one single axis tracking system. Balance of plant works comprise a 35kV cable system collecting the power produced by the PV modules to the point of interconnection (POI) located within the PV plant boundaries. The interconnection of the PV plants BSP1 and BSP2 will require a 1.1km underground line from the POI and the existing overhead line (OHL) at 35kV (one per PV plant) and the substitution of one transformer at the Lyubar substation. For avoidance of doubt the two PV plants are totally independent of each other which means that for each of the PV plant all permits and contracts have been generated individually

### 2.2 Where will the project be located?

The Project is located 6km west of Lyubar and 80km south-east of Zhytomir, west Ukraine. Figure 1 and Figure 2 show the Project location and site respectively.

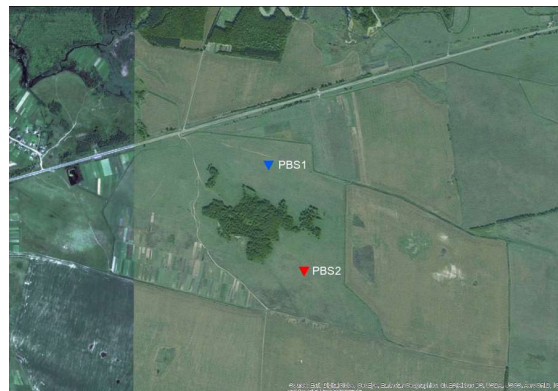
Construction is scheduled to last for approximately six months. The total number of employees on site has not yet been defined by the EPC contractor, however office areas, parking spaces and laydown areas will be temporarily built on site and will be utilised for both projects. The first activity that will be undertaken will be site levelling as the site consists of slopes in various directions.

Figure 1: Project location



Source: ESRI

Figure 2: Project site



Source: ESRI



### **2.3 I live near the project; will I need to relocate?**

No one will need to be relocated during the construction, operational and decommissioning phases of the project; as the project area and surroundings do not contain any households and no land that is currently used for agriculture will be lost.

### **2.4 Are there other proposed developments in the area?**

To our best knowledge no other proposed developments have been identified in the area.

### **2.5 What is the construction program?**

The exact project program is still to be defined however the project is targeting to commence operations in March 2020 and construction is scheduled to last six months.

### **2.6 What will happen during the construction phase?**

During the construction phase, key activities would mainly include: access road improvements, personnel mobilisation and fencing, metal structure grounding, metal structure assembly (supporting solar panels), solar panels installation and excavation activities for underground cabling. No adverse environmental or social impacts are expected to be generated as recognised best management practices (engineering and procedural) will be implemented and measures will be applied in accordance with Ukrainian regulations and international standards.

### **2.7 What will happen during operation?**

Activities during operation are generally limited to cleaning of the solar panel, landscaping, and repair and maintenance activities. These activities would not generate any significant impacts on the environmental and members of the local community.

### **2.8 What will happen at the end of the project?**

The operational life of the project is likely to be approximately 25 years. At this point the project may be refurbished or decommissioned. As part of decommissioning the solar panels will be removed and dismantled so components could be re-used, recycled or disposed of depending on the available technology at the time, but in accordance with the waste management hierarchy. The project area is expected to be re-instated to its initial use.

## 3 Environmental and social impacts

### 3.1 How was the project assessed?

The Project has been assessed through an EIA in line with Ukrainian regulations and requirements. The EIA is included as part of the Design Specification documentation which is submitted to the Ukrainian State of Expertise for review and approval. The State Expertise provided a favourable opinion of the project. The EIA was supplemented by an environmental and social due diligence assessment undertaken by an independent environmental and social advisor directly contracted by EBRD during the second quarter of 2019. The primary objectives of these assessments were to:

- Establish the existing environmental and social conditions in the Modus project area
- Predict the impacts that will occur as a result of the construction and operational phases of the project
- Identify any engineering and procedural mitigation measures required to avoid, minimise, mitigate or compensate the predicted impacts

The assessment process was supported by consultation with the Lyubar village council and members of the local community to ensure that their views and local knowledge were fully considered during the assessment process.

Where potential significant impacts were identified, mitigation measures were provided within an environmental and social action plan to ensure that any identified impacts would be avoided or minimised through the implementation of those actions; to be deployed by the Sponsor and the EPC contractor as appropriate.

### 3.2 How will people and the environment be affected?

Whilst environmental and social issues interact, the findings of the environmental and social assessment broadly cover the following themes:

- Effects on people
- Effects on the natural environment and resources

#### 3.2.1 Effects on people

##### 3.2.1.1 Employment opportunities

In the 2013 public hearing, the project and the Lyubar village council discussed, among other things, the corporate social responsibility (CSR) projects in the Lyubar village and the creating of local jobs during construction. Some people from the nearby villages may be employed in the construction phase and potentially in the provision of local services such as food and accommodation provision for workers.

##### 3.2.1.2 Land use

Prior to the transfer of land use rights for the project, the land was used for agriculture, mainly growing grain and cereals. Since the project leased the land it has been used informally for pasture, with the understanding that this is a temporary arrangement until construction starts.

### 3.2.1.3 Visual landscape

The project will generally be visible from the H03 road that runs on the north boundary. Visibility will be high, particularly for the northern project (BSP1) as the site appears at slightly lower altitude than the road; and BSP2 would be mostly covered by the existing wooded area between the two plots. Accessibility to the project area is by an existing dirt track from the H03 that runs down the western boundary to the various land plots in the south. Due to existing land use in proximity of the project area, landscape value is considered to be low although the project may be a prominent feature in the local landscape.

### 3.2.1.4 Vibration and noise

There will be no vibration generated during the construction and operational phase of the project. The EPC contractor will check and monitor for excessive noise, however due to the distance of the project site from any houses, noise and vibration will not represent a nuisance to the local community.

### 3.2.1.5 Electromagnetic fields

Electromagnetic fields generated by the components of the project will not exceed the magnetic field frequency of 50Hz (hertz), so it is not predicted that there will be any impact on people from electromagnetic fields.

### 3.2.1.6 Ambient air quality

Potential impacts on the ambient air quality would be mainly from exhaust emissions from mobile equipment and dust generated during construction activity. As limited mobile equipment will operate at any one time, this is not expected to be significant.

## 3.2.2 Effects on the natural environment

### 3.2.2.1 Global warming

A key positive impact of the Project is that it will use solar energy to produce electricity. The project maximum capacity will be approximately 35MW, which will contribute to a sustainable supply of electricity to the national grid, to help meet the increasing electricity demands throughout Ukraine.

### 3.2.2.2 Biodiversity, flora and fauna

From the information gathered on site, and based on the evidence presented in the EIA, the project is not located on any legally protected or internationally recognised areas of biodiversity value. Based on observations and considering the existing land use at the project site and its surroundings (cultivated, modified and pastoral/agricultural land), we consider it unlikely that the project site would support species that are globally critically endangered (CR), endangered (EN), endemic, restricted range, migratory or congregator.

Figure 3 below presents the project site and Figure 4 shows the only two tree species present; which are common in the area and not great in numbers at the project site.

**Figure 3: Project site**



Source: Mott MacDonald

**Figure 4: Only two types of trees identified**



Source: Mott MacDonald

### 3.2.2.3 Archaeological and cultural heritage

The Ukrainian Centre for Holocaust Studies founded 17 years ago is a non-governmental research and education organisation which identifies potential sites of mass graves from the Holocaust, and installs memorials. They operate all over Ukraine and are funded by their German non-governmental organisation (NGO) counterpart, which in turn is funded by the German government. Through document reviews and eye-witness and verbal accounts, the organisation has concluded that there is a mass grave of approximately 200-400 people, who were killed in August 1941, and the potential siting of this grave is near the project site. Staffordshire University (in the UK) undertook a non-invasive survey (in line with Jewish principles) in the area in 2017. The survey did not conclude presence of any graves, however the other available evidence (eye witnesses, letters and other documents) suggests that it is likely to be close to the project area. The potential location of the mass grave is marked with a yellow star on Figure 5 above. Currently there is a marker (wooden stick) that locates what would eventually be the location for the installation of a memorial.

**Figure 5: Marker for the location of a memorial (in red)**



Source: Mott MacDonald

The location of the future memorial is outside the boundary of the project, it will however be reached by using part of the same project access road. The memorial will be sufficiently distanced from the site so as not to be impacted in any way, furthermore, between the memorial and the site there is a line of trees that will provide a natural protection buffer zone between the memorial and the project.

#### **3.2.2.4 Water resources**

There will be no groundwater abstraction required for the construction or operational phases of the project, therefore no impacts on groundwater resources is anticipated. Water will be supplied to the site by truck from a local provider and stored on site in tankers.

#### **3.2.2.5 Waste management**

Hazardous waste streams may be generated through disused solar panels, which would need to be collected by a specialist waste management service provider. A waste management procedure will be produced as part of the overall management system to ensure that waste is properly managed and disposed of. Waste streams generated by the construction phase include mainly ferrous and non-ferrous metals, wood pallets, plastic, and cardboard. These will be segregated by the EPC contractor and collected by a local waste management service provider under a contractual agreement.

#### **3.2.3 How might the impacts combine with other projects?**

There are no known developments in the project area. Therefore, no significant cumulative impacts are presently anticipated.

### **3.3 Summary**

No significant negative impacts to either the environment or people are predicted as a result of the Modus project. Any negative impacts are expected to be minor, temporary in nature and will be avoided or minimised through mitigation measures which are set out in an environmental and social monitoring and management plan to be deployed by the Sponsor and the EPC contractor during the life of the Project.

