



Kalynovka Solar Project

Non-Technical Summary

23 November 2018

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1 Introduction

1.1 Overview

This Non-Technical Summary (NTS) presents the main findings from assessment of the environmental and social impacts of the 13.5 MWp Kalynovka solar project (the Project). The Kalynovka project is located within the Mykolaiv region of Ukraine and approximately 20km northeast from Mykolaiv city centre.

1.2 Who is developing the project?

The project is being developed by Vita Solar LLC (the Project Proponent), owned by TIU 1, which is a limited company 100% owned by TIU Canada. TIU Canada is owned by Refraction Asset Management Ltd, a Canadian based energy investment fund which has operated within the solar, oil, and gas industries since the 1990s. Helios Strategia, which has been contracted to build the Project under an Engineering Procurement and Construction (EPC) Contract, is responsible for the design, procurement, construction, commissioning and handover of the project to the Project Sponsor. The construction phase of the Project was initiated in July 2018 with the commissioning phase scheduled for March 2019.

1.3 Who is financing the project?

The European Bank for Reconstruction and Development (EBRD) is considering providing a loan to Vita Solar LLC. EBRD is owned by 67 countries, as well as the European Union and the European Investment Bank. The 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?

EBRD is considering the Kalynovka project as a Category B project under the EBRD Environmental and Social Risk Categorisation List - Revised 2014, and the EBRD Environmental and Social Policy 2014 (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 Is there an opportunity to comment on the project?

In addition to a public hearing consultation which has been undertaken in August 2017, community members and any other stakeholders are invited to comment on the Project. Please see below contact details of the Project Proponent should you have any comments or queries associated with the Kalynovka project.

Table 1: Project company contact details

Project Proponent	Information
Name	Oleksandr Gliadchenko
Address	01001, Kyiv, str.Volodymyrska, 18/2, apt.17
Telephone	+380503582247
E-mail	ogliadchenko@tiucanada.com
Website	www.tiucanada.com

1.6 Stakeholder engagement

A public hearing was conducted in August 2017 which was attended by Vita Solar LLC, Helios Strategia, the Kalynovka village council and 28 members of the local community. At the hearing, the village head and community provided a favourable opinion to the project with no objections.

A Stakeholder Engagement Plan has been drafted to identify stakeholders including affected people and other interested parties. It contains the grievance mechanism. In case of any complaints or grievances related to the project, please contact Vita Solar LLC via the contact details above.

2 The Kalynovka Project

2.1 What is the Project

A solar power plant generates electricity through the photovoltaic effect in which the energy from light (produced by our 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 project's installed capacity is 13.5 MWp.

The Kalynovka project will consist of up to 39,000 solar panels installed on a mounting system and arranged in arrays positioned to maximise the collection of solar energy. The balance of the systems consists of associated ancillary infrastructure components, including a switchgear box building to be established on-site and underground electrical cables positioned within trenches (1m depth, 60cm width) connected to an overhead transmission line (OHL) located 2km southeast of the project.

Figure 1: Project solar panels



The cables trenches will be established along communal tracks between the project boundary and the OHL connection point. While outside the project footprint area, the existing OHL, operated by the national grid operator and connected to a substation positioned approximately 8km southwest from the project, will be subject to an improvement programme undertaken by the EPC contractor.

2.2 Where will the project be located?

The Kalynovka project is located within the Mykolaiv region of Ukraine and approximately 20km northeast from Mykolaiv city centre. It will be built within a land area of approximately 20 hectares, as illustrated by Figure 3. The project land area was used as undeveloped pastoral land prior to the commencement of the construction phase in July 2018. The immediate surrounding land supports agricultural land (wheat production) towards the west and north and undeveloped pastoral land towards the east and south.

Figure 2: Project area undeveloped pastoral land



Figure 3: Project location



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 Kalynovka project, as the project area and surroundings do not contain any households and no land that is currently used for agriculture will be lost. The land supporting the Project was directly acquired from private owners by Vita Solar LLC in the course of 2017. The nearest permanent people live in Kalynovka village, approximately 1-1.5km west from the project along road H11.

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?

Construction activities have been and should be undertaken in accordance with the below schedule:

- July and August 2018 - mobilisation and fencing
- September 2018 – construction of metal structure grounding and foundations for inverters, access road improvement (gravel)
- October 2018 - construction of onsite underground trenches, installation of video surveillance system (CCTV cameras)
- November and December 2018 - installation of the solar panels, installation of the inverters, electrical connection
- January 2018 - commissioning phase
- March 2019- operational phase.

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, excavation activities for underground cabling, and improvement on the existing OHL. 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.

Figure 4: Trench for underground cabling



Figure 5: Mobile equipment



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 environmental impact assessment (EIA) in 2017 in line with Ukrainian regulations. 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 Kalynovka 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 third quarter of 2018. The primary objectives of these assessments were to:

- Establish the existing environmental and social conditions in the Kalynovka project area
- Predict the impacts which 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 Kalynovka 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 the environmental and social action plan in order to ensure that any identified impacts would be avoided or minimised through the implementation of those mitigation measures to be deployed by Sponsor and the EPC contractor.

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

The closest village to the project is the Kalynovka village located approximately 1-1.5km west from the project along H11. The Project is not expected to generate any significant adverse impacts on the nearby communities. Some people from Kalynovka village are employed in the construction phase and local services are being used such as food and accommodation provision for workers.

3.2.1.2 Land Use

The Project footprint extends over an area of approximately 20 hectares, which prior to the start of construction was undeveloped pastoral land. Land use within a 500m radius of the site is agricultural land towards the east, north and west and undeveloped pastoral land towards the south. The project will not impact on the existing land use outside the site boundary.

Figure 5: Agricultural land towards the west of the project site



Figure 6: Agricultural land towards the north of the project site



Figure 7: Undeveloped pastoral land towards the south of the project



3.2.1.3 Transportation

The solar panels would be initially delivered by ship to the Odessa Port prior to being brought to the project area by road, arriving via the H11 single carriageway road which is approximately 500m west and parallel to the boundary of the project. It is expected that 53 trucks would be needed to transport the solar panels to site (about 730 solar panels per truck). Inverters would also be delivered by road (5 trucks) from Sicilia to the project site. Access to the project area from the H11 is by a track on communal land running between the H11 and the project site. Due to the low traffic generated by the construction phase, no adverse impact on the local road network is expected.

Figure 8: H11 highway



3.2.1.4 Vibration and noise

There will be no vibration generated during the construction and operational phase of the project. The EIA confirmed that noise will not exceed the emission limit values of 55 dBA during daytime and 45 dBA during night time, ensuring compliance with Ukrainian regulations and no noise nuisance at the nearest houses.

3.2.1.5 Electromagnetic fields

Electromagnetic fields generated by the components of the project will not exceed the magnetic field frequency of 50 Hz 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 during the construction. As only a few mobile equipment will operate at only one time this would be expected to not significant.

3.2.2 Effects on the natural environment

3.2.2.1 Global Warming

A key positive impact of the Kalynovka project is that it will use solar energy to produce electricity. The project maximum capacity will be 13.5MW, which will contribute to a sustainable supply of electricity to the national grid, to help meet the increasing electricity demands throughout Ukraine. In

addition, and as a positive note, electricity is currently supplied to the construction site by a set of solar panels installed on the project footprint area.

3.2.2.2 Biodiversity

The Kalynovka project is not located on any legally protected or internationally recognised areas of biodiversity value, and there are no World Heritage or Ramsar sites with a 50km radius. There is only one legally protected area, Khrystoforivski Plavni, located within 15km of the Project Site (Emerald Network, 2018). The area is protected to preserve the grassland habitat that it supports. The project is therefore not expected to adversely impact any of these areas of biodiversity importance.

3.2.2.3 Archaeological and Cultural Heritage

Neither archaeological artefacts nor cultural heritage sites were identified through the assessment process, including a thorough review of the cadastral documentation, and interviews with members of the local community. It is therefore anticipated that the Project would not impact on any archaeological and cultural heritage sites.

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 is supplied to the site by truck from a local provider.

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 including mainly ferrous and non-ferrous metals, wood pallets, plastic, and cardboard. These are 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, at present no significant cumulative impacts are anticipated.

3.3 Summary

No significant negative impacts to either the environment or people are predicted as a result of the Kalynovka 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.