

Zwartowo Photovoltaic Farms Project

Non-Technical Summary

Final



Prepared in cooperation with:

Multiconsult
POLSKA

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1 Introduction

Stigma Sp z o.o. ("Stigma") is developing and constructing a Solar PV renewable energy project of up to 290MWp (the "Project"). Stigma is owned by Green Energy Services sp. z o.o., which is a joint venture between Solarnet Investment GmbH and the Polish company Energy Consult Sp. z o.o. Solarnet Investment GmbH is the investment arm of GOLDBECK SOLAR Group ("Goldbeck Solar") one of Germany's largest project developers, EPC and O&M providers.

The Project will potentially be co-financed by consortium of Lenders, including European Bank for Reconstruction and Development (EBRD), Bank Pekao S.A. and PKO Bank Polski, therefore compliance with EBRD Performance Requirements and applicable Polish regulations was confirmed by independent consultants.

Stigma has employed the knowledge of the Goldbeck Solar team of experts to develop, construct and ultimately operate the Solar PV plant and the knowledge of Energy Consult Sp. z o.o. for local support inclusive of environmental, social and health & safety issues.

Goldbeck Solar was founded in 2001 and currently has 150 employees. Since then it has completed photovoltaic installations with a total capacity of c. 2 GWp.

Goldbeck Solar is a global company involved in design, construction and operation of solar plants, solar roofs and other large scale solar projects. The Company is following its green policy, based on commitment to the motto: "Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs". The Green Policy includes declarations to:

1. Promote the use of clean photovoltaic energy solutions and the efficient use of energy, thus helping to reduce CO2 emissions.
2. As part of the supply chain, Goldbeck promote solving environmental problems. The company is committed to ensuring that all stakeholders promote environmental protection and minimise logistical processes in sales, purchasing and contractual processes.
3. comply with the environmental regulations of the countries and regions in which it cooperates
4. strengthen the awareness of its employees for sustainability and environmental issues by motivating them to deal with environmental protection through training and further education. Internally, Goldbeck promotes sustainable mobility for employees and reduced consumption of plastics.
5. develop products with a view to the efficient use of natural resources.
6. optimise internal processes and technologies to minimise and recycle the waste generated by business activities.

7. create safe and healthy workplaces and to ensure that the employees are trained for all safety equipment with which they come into contact.
8. Be committed to continuously review and improve the progress of environmental protection performance.

Goldbeck Solar has also introduced a Sustainability Policy. As an internationally operating company, Goldbeck Solar sees itself as responsible for actively participating in the achievement of the United Nations 17 sustainable development goals (SDGs), notably goal number 7 – affordable and clean energy. Goldbeck Solar's business is solar energy and photovoltaic systems that enable consumers to cover their energy needs in a sustainable way. This contributes to CO₂ emission reduction.

The company has not implemented any formal Environmental and Social Management System, but the policies implemented (including compliance policy) ensure proactive environmental actions. The standards are implemented throughout the entire Goldbeck Solar Group and are discussed with employees, customers and suppliers. For supply chain, notably panels and inverters, Goldbeck Solar requires companies to commit to the UN 17 SDGs and be Social Accountability certified (SA8000¹), thus ensuring fair and decent treatment of workers and adherence to the highest social standards.

The SA8000 Standard is based on internationally recognized standards of decent work, including the Universal Declaration of Human Rights, ILO conventions, and national laws. SA8000 applies a management-systems approach to social performance and emphasizes continual improvement.

Elements of the SA8000 Standard include child labour, forced or compulsory labour, health and safety, freedom of association & right to collective bargaining, discrimination, disciplinary practices, working hours, remuneration and management system.

No environmental management system or dedicated procedures have been developed for Stigma, as the organisation of the team is ongoing. The management systems and environmental, health and safety and social issues management will be developed in cooperation with EBRD to agree a system that is practical and proportional to the environmental impact. Currently, operational management of all environmental and social issues lies with Kuba Puchowski a subcontractor providing environmental supervision of the construction site. Nevertheless, a dedicated person for EHS issues management will be assigned to ensure on-going compliance with respective requirements. The EHS management system will include periodic audits of current operations and reporting to the Lenders and stakeholders.

The Project is under construction. All necessary permits for the Project are in place, including construction permit containing all requirements specified in preceding environmental consent decision (issued by the competent authorities).

¹ <https://sa-intl.org/programs/sa8000/>

The environmental and social impacts associated with the Project had been identified and addressed through standard mitigation measures.

2 Where the Project will be located?

The site is located in Zwartowo, Choczewo Commune, Northern Poland. The site is found ca. 4 km away from planned location of first Polish Nuclear Power Plant



Figure 1 Location of the Zwartowo photovoltaic farm in Poland

What is the scale of the Project and how will it impact protected areas?

The Project consist of a photovoltaic farm covering an area of ca 380 ha. Part of the site is excluded from the development, as the class of arable ground does not allow for change of use. The area covered by the PV panels will account to ca 311 ha. The location was selected keeping in mind the site setting, access to public road and power station for power distribution.

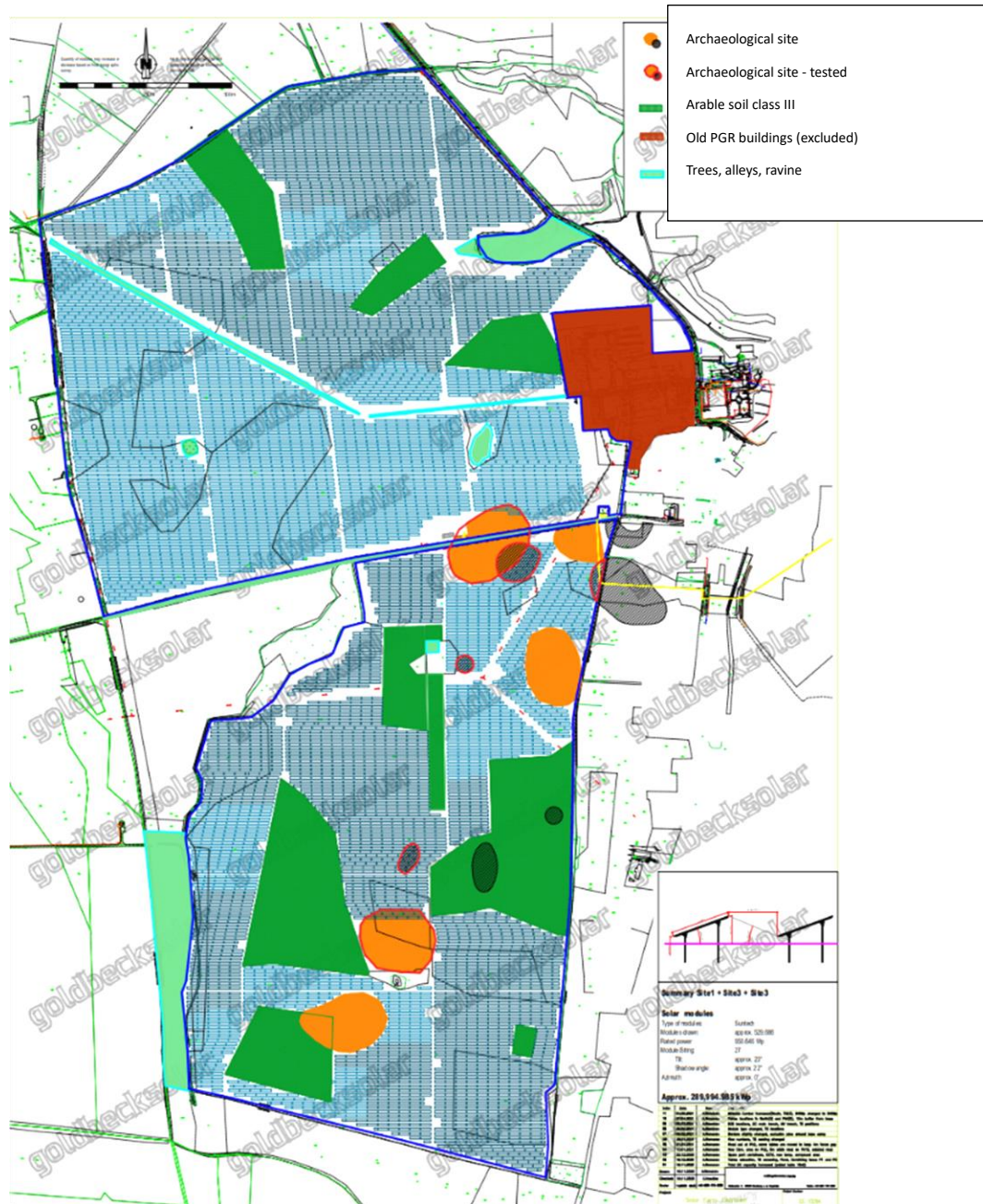
The area of the investment is located outside significant and dense forest complexes, marshy areas, areas identified as valuable for scientific interest.

There are a number of archaeological sites that needed investigations and inventory before the construction was permitted. The studies included intrusive investigations involving excavations and resulted in identification of number of ancient artefacts, like remnants of treadmill and brick making:



The areas were investigated and the documentation of investigations was approved by Regional Heritage Protection authorities. Following the acceptance, the site was ready for construction.

The location of these sites is presented in the map below:



No valuable fauna or flora will be impacted by the construction of the farm. No protected areas will be destroyed or influenced during construction. Construction yard of Zwartowo photovoltaic farm transformer station is presented in the photograph below.



What are the Environmental and Social impacts of the Project?

During construction, the key impacts are associated with transport and installation of supporting structures.

The heaviest and the noisiest equipment is the pile driver nailing the metal poles into the ground (support construction for the panels). Construction works and increased heavy traffic include heavy machinery operations during earthworks, increased noise and vibration. The developer will be required to implement best practice solutions to minimise the nuisance caused by the construction works.

No significant environmental impacts are associated with the operation of the Project.

The photovoltaic plants are constructed to the maximum level of 4 metres above the ground and will not influence the landscape of the agricultural areas. The plant may be regarded as visually intrusive to current rural landscape. Nevertheless, it should be stressed that the evaluation of the influence of the photovoltaic farm on the landscape is difficult and depends on the individual approach.



Given the average electricity production of the Project of in the region of 290 GWh per year, the cumulative emission reduction will amount to:

- Sulphur dioxide (SO₂) –158 tonnes per year,
- Nitrogen oxides (NO_x) – 162 tonnes per year,
- Dust – 8 tonnes per year,
- Carbon dioxide (CO₂) – 216 000 tonnes per year.

As calculated above, the Project will allow for significant air emission reduction. Moreover, solar farms allow to advance local communities, providing financing to communal budgets.

The solar farm design assumes at least 30 years of operations. After that time, the area can be returned to previous, intensive agricultural production.

3 What is a photovoltaic plant?



A photovoltaic plant, also called solar farm is an installation of photovoltaic panels (PV panels) commonly known as solar panels. Solar farms generate power using devices that absorb energy from sunlight and convert it into electrical energy through semiconducting materials.

A single PV device is known as a cell. An individual PV cell is usually small, typically producing about 1 or 2 watts of power. These cells are made of different semiconductor materials. In order to withstand the outdoors for many years, cells are sandwiched between protective materials in a combination of glass and/or plastics.

To boost the power output of PV cells, they are connected together in chains to form larger units known as modules or panels. Modules can be used individually, or several can be connected to form arrays. One or more arrays is then connected to the electrical grid as part of a complete PV system. Because of this modular structure, PV systems can be built to meet almost any electric power need, small or large.

PV modules and arrays are just one part of a PV system. Systems also include mounting structures that point panels toward the sun, along with the components that take the direct-current (DC) electricity produced by modules and convert it to the alternating-current (AC) electricity. AC is then transformed to high voltage (110 kV) and fed into the grid.

The plant comprises of:

- photovoltaic panels with a total nominal capacity of up to 290 MWp,

- supporting structure for installing panels (i.e. photovoltaic tables) at an angle of 23-24 degrees, south oriented, founded on the ground,
- inverters converting direct current into alternating current energy,
- monitoring and control installation to monitor energy production and the operating parameters of the solar power plant,
- lightning protection,
- switchboard station located in a special building with transformers located next to it and ca. 30 km long 110 kV ground cable line,
- fence,
- access road and manoeuvring area,
- other infrastructure elements.

The Project will utilise Wuxi Suntech 500 and 550 panels. Suntech is a world class manufacturer of PV panels, holding ISO 9001, 14001, and 45001 certificates as well as SA 8000 accreditation, all of these being issued by SGS (UK and Italia).

Inverters are supplied by SMA.

The power connection of the farm will be ca. 30 km long and will cross forest and protected areas. In line with the documentation prepared for the cable routing, no issues associated with the environmental impact of the line are expected. All the sections crossing the protected areas will be constructed using underground directed boring methods.

4 What is the rationale of the Project?

In line with the European Climate Change Program, many European countries, including Poland, have adopted national programs aimed at reduction of greenhouse gases emissions. These cover various policies, adopted at the European level as well as national levels, includes among others:

- Planned increase in use of renewable energy (wind, solar, biomass)
- Improvements in energy efficiency in e.g. buildings, industry, household appliances;

The main regulations of EU countries to reduce emissions is the cost-effectively Emission Trading Scheme of carbon dioxide and legislation tackling with emissions of fluorinated greenhouse gases.

In March 2007, the EU approved an ambitious climate change and energy plan to limit greenhouse gas emissions by at least 20 % by 2020 (comparing to 1990 levels) and achieve, by 2020 a target of 20 % of total EU primary energy use through renewable energy and 32% in 2030.

Poland, has already approved its energy policy until 2040 'Polityka energetyczna Polski do 2040 roku'. Based on this document Poland plans to achieve the renewable energy in total energy consumption of at least 15 % by 2020 with its further growth. According to the Policy, Poland declared achievement of 21 % renewable energy use in total energy consumption by 2030.

The development of solar energy is one of the measures to achieve the limitations of air emissions and increase of energy production from renewable sources. The main benefit is that photovoltaic plants convert solar energy to electricity, while generating no emissions to the air. Conventional energy sources, mainly based on various types of coal incineration, when producing energy generate emissions of greenhouse gases, SO₂, dust and others.

The project will allow for limiting the air emission from conventional energy sources (in Poland these are mainly coal fired power plants).

5 What is the legislative context of the project and were there any public consultations?

According to environmental regulations on disclosure on environmental information, public participation in environment protection and on environmental impact assessments, an Environmental Impact Assessment (EIA) procedure must be performed for projects which can always significantly impact the environment (group I projects) or may be conducted upon discretion of the authorities in charge for particular investments, which can potentially impact the environment (group II projects), or may impact area of 'Natura 2000'. EIA's are carried out to obtain a Decision on Environmental Conditions (environmental consent decision) for group I and group II projects.

In line with Polish regulations, the photovoltaic plants are investments, which could potentially impact the environment (mainly due to the area changed into industrial use).

For the development, a Project Information Document (Pol. Karta Informacyjna Projektu) was prepared and issued to the local authorities for their assessment of the need for Environmental Impact Assessment Reports. PID contained description of the location, setting and possible impacts of the project. The project was considered by the authorities as not requiring the full EIA procedure, thus Environmental Consent Decisions was issued based on documentation prepared by the developer.

The procedure included review by statutory bodies and public announcement of the intention to issue the decision. According to Polish EIA Act the statutory institutions involved in the procedure (providing opinion, requesting further data) included Regional Director of Environmental Protection (RDOS) and regional Sanitary and Epidemiology Station. In case of the Zwartowo Project also Water Management Authority (Wody Polskie) was consulted regarding melioration issues.

Following the procedure and consultation periods, the competent authorities issued the environmental consent decisions. The project has already obtained construction permit.

6 Is additional information available?

Goldbeck will maintain a webpage, where all achievements associated with the project will be announced and requests for additional information related to the Project could be addressed.

The mechanism for the claim procedure will be implemented by the company as part of the Project management system – a standard grievance form is provided at the end of this document.

Direct requests can be addressed to:

Artur Schilhabel, Member of the Management Board

e-mail: artur.schilhabel@goldbecksolar.com

Public grievance Form

Reference No:	
Full Name	
Contact Information Please mark how you wish to be contacted (mail, telephone, e-mail).	By Post: Please provide mailing address: _____ _____ _____
	By Telephone: _____
	By E-mail _____
Preferred Language for communication	<input type="checkbox"/> Polish <input type="checkbox"/> English
Description of Incident or Grievance: What happened? Where did it happen? Who did it happen to? What is the result of the problem?	
Date of Incident/Grievance	
	<input type="checkbox"/> One time incident/grievance (date _____) <input type="checkbox"/> Happened more than once (how many times? _____) <input type="checkbox"/> On-going (currently experiencing problem)
What would you like to see happen to resolve the problem?	