

**Due Diligence, Environmental and Financial Report  
for the 50 MW Solar PV Project Based in Lisbon,  
Portugal.**

**Key Figures**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**Key Figures**

<b>Waterfall</b>	<b>Sep 2022 - Aug 2042</b>
	<b>€ (EUR)</b>
CFADS	115,336,906.14
Interest	(6,707,791.97)
Fees	(73,235.49)
Principal	(28,800,000.0)
Tax Facility	(15,951,175.74)
Net Profit (CFADS)	63,804,702.95
Cash Available to Equity	63,804,702.95

Client  
50 MW Solar PV Project based in Lisbon, Portugal.  
June, 2021

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Company: Temcore Limited  
Email: Tete.Mbuk@temcoregroup.com  
Project Name: Lincoln Solar Farm  
Project Site: Lisbon, Portugal  
Irradiance/yr.: 1,634.66 kWh/m2/yr  
Analysis Currency: European Euro €

**Contents**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**Contents**

	<b>Page</b>
Key Figures	1
Client	2
Important Note	4
Country Overview	5
Project Parameters	6
Financial Summary	7
Sensitivity Analysis	9
Site Overview	10
Environmental and Social Analysis	11
Technical & Design Report	13
Balance Sheet	16
Expenditure	18
Appendix	19

**Important Note**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

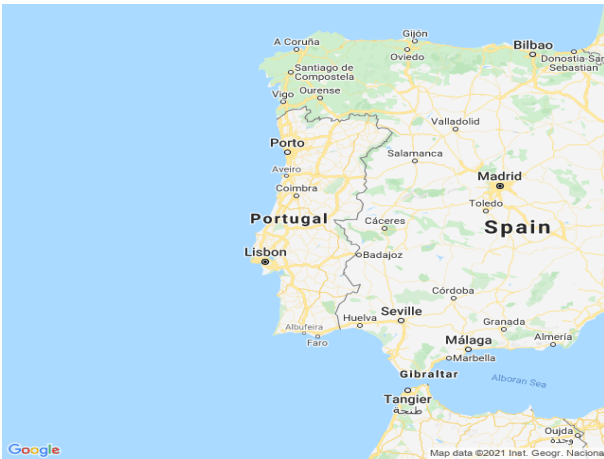
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This document is a comprehensive report assessing the viability of your 50 MW Solar PV Project based in Lisbon, Portugal.

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**Country Overview**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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Population:	10,283,822
Language:	Portuguese
Local Currency:	EUR European Euro
Exchange Rate:	1 USD to 0.82 EUR

## Power Market

In Portugal, electricity from renewable sources from registered plants until 7 November 2012 is promoted mainly through a feed-in tariff (FiT). Until then, funding can be given to new RES plants via a general scheme (i.e., wholesale electricity market) or through the guaranteed remuneration programme. The latter depends on the resources allocated through the initiative of a public tender. Nevertheless, tender RES rules were never written, nor was any auction initiative launched. Therefore, new RES plants will only be paid via the wholesale electricity market as of November 2012.

A specific fee scheme for electricity generated from small-scale production (UPP) and self-consumption (UPAC) units came into force in January 2015 and is based on a bid model where producers give discounts on a reference tariff. The UPPs and UPACs have common regulations and unique features. There is currently no system for direct funding or tax incentives in place for RES-H (as of November 2018); only indirect support. The main incentives in the transport sector are a quota scheme for biofuel and a tax exemption for small biofuel producers (PPDs).

Connection to the grid for electricity from renewable sources is provided in compliance with the principle of non-discrimination and preference is given to electricity generated from RES (except for installed hydroelectric plants with a capacity exceeding 30 MW). In the past few years, the requirement to buy the electricity produced from renewable sources during the time they profit from the FiT has provided favourable conditions for the deployment of RES-E. In general, grid operators are expected to build the grid network. But plant operators are not allowed to claim grid expansion.

**Project Parameters**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**1. Project Background**

The primary purpose of this report is to measure the financial viability and identify the social and environmental risk(s) associated with your 50 MW Solar PV Project based in Lisbon, Portugal. You have selected to enter into a 20yr. Power Purchase Agreement at a wholesale PPA price of € 0.097/kWh with the utility, Energias de Portugal.

**2. Parameters**

	Notes	Input
<b>Dates</b>		
Financial Close		01 September, 2021
Project Start	1yr const.	01 September, 2022
Contract Expiration	20yrs	31 August, 2042
<hr/>		
<b>General</b>		
Project Size		50 MW
PPA Price	Fixed	€ 0.097/kWh
Irradiance		1,634.66 kWh/m2/yr
<hr/>		
<b>Capital Expenditure</b>		
Project Cost		€ 48,000,000
Loan Value	60.0 %	€ 28,800,000
Equity Value	40.0 %	€ 19,200,000
<hr/>		
<b>Debt Financing</b>		
Repayment Type		Fixed P+I/Mortgage
Loan Tenure		10 yrs
Interest rate		4%
<hr/>		
Discount Rate		10.0%
Tax		20.0%
<hr/>		

**Financial Summary**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**3. Financial Summary**

	<b>Notes</b>	<b>Output</b>
<b>Maturity</b>	10 yrs	01 September, 2032
<b>Draw Down</b>		01 September, 2021
<b>NPV</b>		€ 1,392,563.42
<b>NPV of Annual Cost</b>		- € 1,432,382.84
<b>Salvage Value</b>		€ 9,600,000.0
<b>Profitability</b>		1.09
<b>IRR at the end of project</b>		10.8%
<b>Revenue Forecast</b>		€ 112,342,607.34
<b>Levelized COE</b>		€ 0.1/kWh
<b>Generation Forecast</b>		1,158,171,209.68 kWh

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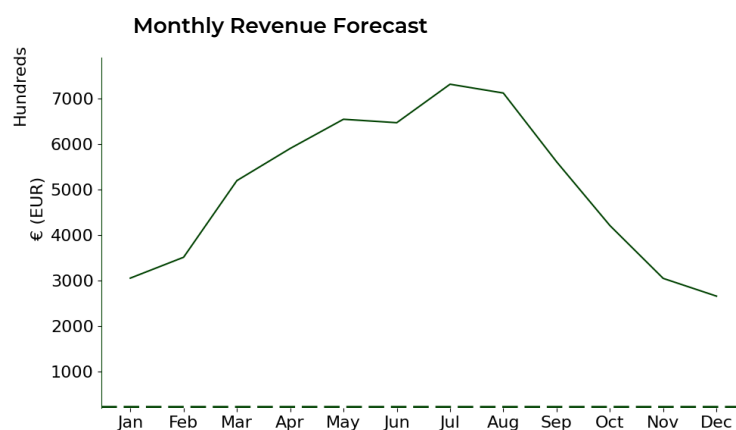


**Financial Summary**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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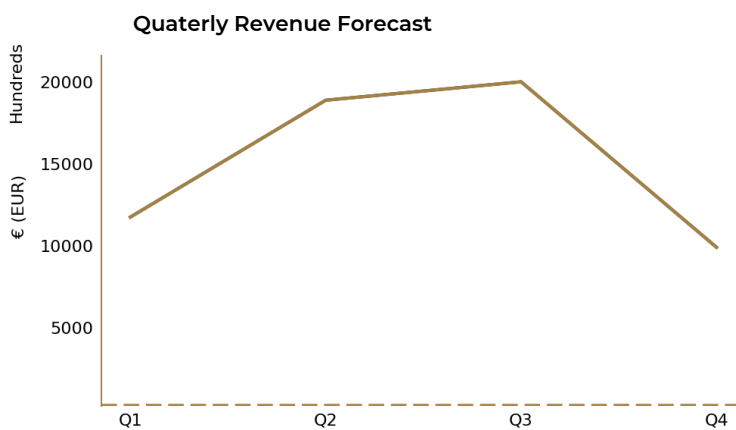
#### 4. Monthly returns

The graphical illustrations shown in this section represents the revenue forecast for the first year of generation.



##### Monthly Returns

Highest: Jul € 731,072.59  
Lowest: Dec € 265,606.11



##### Quarterly Returns

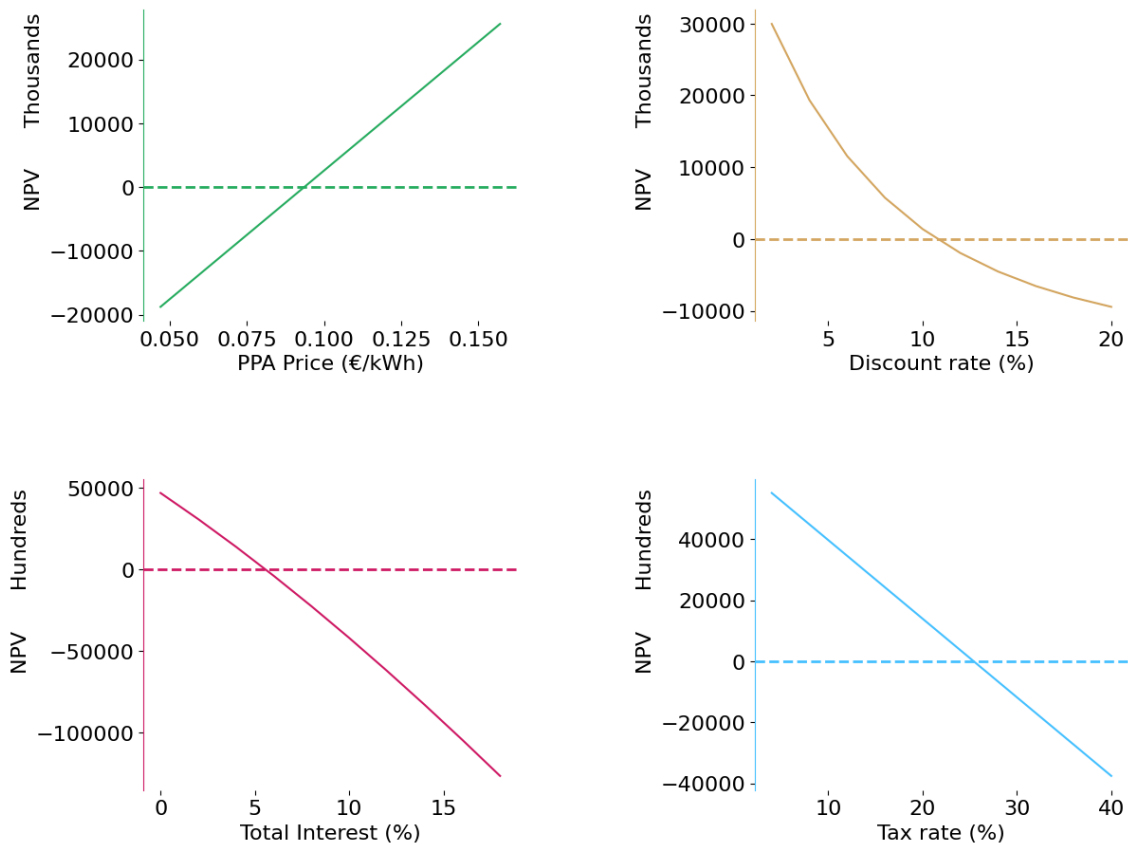
Highest: Q3 € 2,003,420.27  
Lowest: Q4 € 990,842.0

**Sensitivity Analysis**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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## 5. Sensitivity Analysis

This section uses sensitivity analysis to account for future uncertainty of the proposed €48,000,000 solar PV Project in Lisbon, Portugal. This analysis will look at four different variables (i.e., PPA, discount rate, total interest rate and tax rate), relative to Net Present Value (NPV).



## Results

The results show that for every €0.01/kWh increase in the PPA price, the NPV increases by €4,032,834.43. In this instance, a positive NPV is achieved at a PPA price of €0.097/kWh. Results also show that for every 2% increase in the discount rate and total interest, their NPV values decrease by an average of €4,375,287.77 and €1,602,962.6 respectively. The sensitivity analysis for corporate tax rate shows that the NPV value falls by €1,029,628.17 for every 4% decrease in tax.

**Site Overview**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**6. Additional Information**

**Location Data**

Capacity Factor	17.12 %
Homes Supplied	17,625.0 Homes
Rainfall	1,666.0 Millimetres/yr
CO2 Savings	23,163.42 Tonnes Co2/yr

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**Land**

Land Agreement	Full Ownership
Land Size	64 Hectares
Land Lease cost	No Lease Agreement

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**Environmental and Social Analysis**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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Project site: Lisbon, Portugal  
Coordinates: lat: 38.7227 N long: 9.1449 W  
ESG Risks: 2 identified

### **Risk Warning(s)**

**Flood Risk      Sustainable Land-Use**

#### **i. Flood Risk**

For most part of the year 2021, Lisbon, Portugal will face heavy rains and gusty winds. In 2021, Lisbon will receive approximately 1,666.0 mm of rain, which rates as one of Lisbon's heaviest rain showers over the last decade. As the wiring system, inverters and panels may be exposed to water damage, this heavy shower over the year can lead to the destruction of your 50 MW solar infrastructure.

#### **Mitigation 1**

Relocate project site to an area in Portugal where the flood risk is low.

#### **Mitigation 2**

Invest in sustainable drainage measures on the project site, such as swales and infiltration trenches.

#### **Mitigation 3**

Raise the height of the solar mounting system and key electrical infrastructure above 5.5 feet.

## ii. Sustainable Land-Use

64 hectares (158.15 acres) of land will not be sufficient to build your 50 MW Monocrystalline Silicon solar farm.

### Mitigation 1

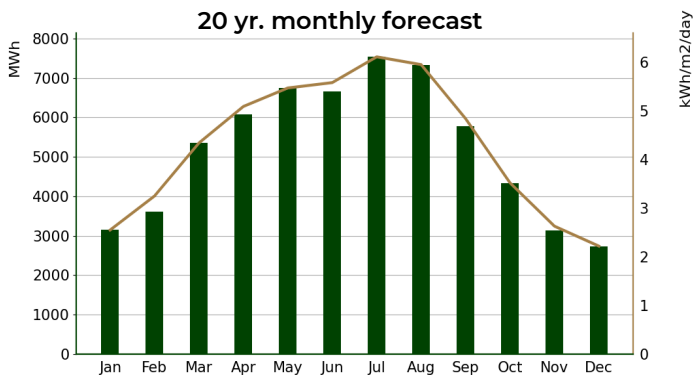
Consider securing a land area between 91.0 hectares (224.9 acres) and 117.5 hectares (290.4 acres).

**Technical & Design Report**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

**Project Name:** Lincoln Solar Farm  
**Location:** Lisbon, Portugal  
**Size:** 50 MW

**Irradiance/yr:** 1,634.66 kWh/m<sup>2</sup>/yr  
**Nb of Modules:** 147,058 PV Modules  
**Meteor Data:** NASA

**Generation Forecast and Daily Irradiance-Monthly Over-Time**



**Yr. 1 Electricity Yield:** **62,478.89 MWh/year**

**Production Probability**

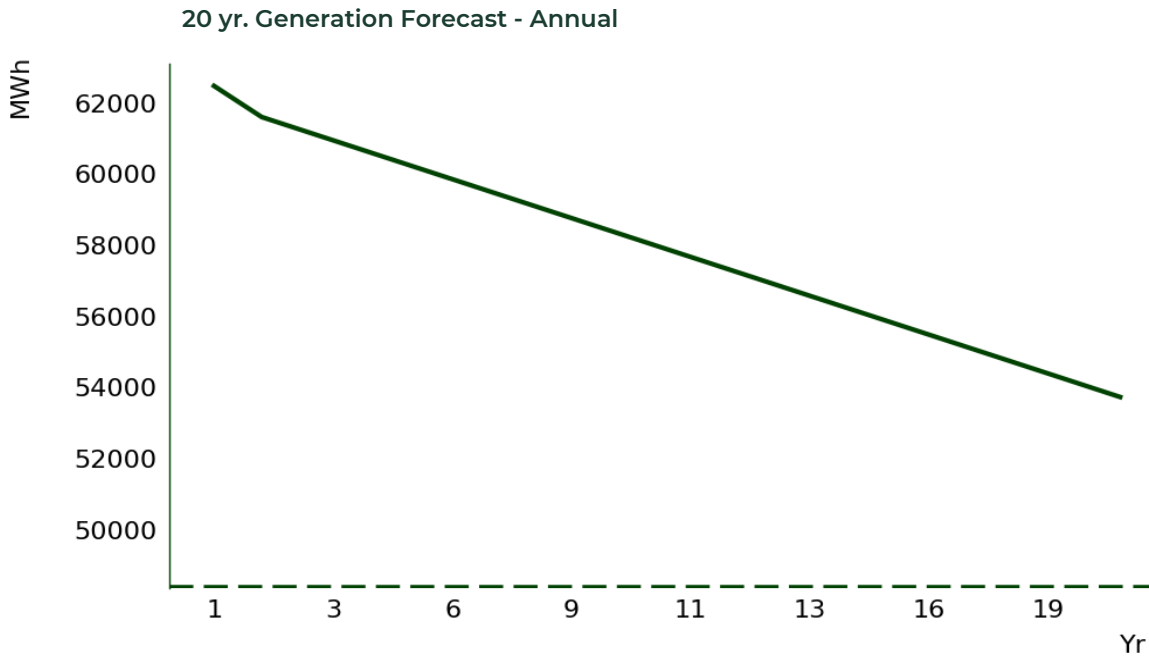
**P50:** 65,482.68 MWh/year  
**P90:** 62,478.89 MWh/year  
**P95:** 60,976.99 MWh/year

	Irradiance kWh/m <sup>2</sup> /day	Ambient Temperature °C	E_Grid MWh
Jan	2.55	9.28	3146.105
Feb	3.25	10.3	3618.492
Mar	4.34	12.68	5354.345
Apr	5.09	14.33	6082.093
May	5.47	17.1	6743.439
Jun	5.58	20.54	6665.734
Jul	6.11	22.56	7536.831
Aug	5.95	22.73	7337.345
Sep	4.84	20.9	5779.642
Oct	3.52	17.17	4336.64
Nov	2.63	12.7	3140.018
Dec	2.22	10.22	2738.207

**Technical & Design Report**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

**Technology:** Monocrystalline Silicon  
**PV Module Watt Peak:** 340 Wp  
**PV Degradation:** 0.7 %

**PV Module Efficiency:** 17.0 %  
**Land Area:** 64 Hectares  
**Rainfall:** 1,666.0 Millimetres



Year	E_Grid MWh	Year	E_Grid MWh
1	62478.89	13	56793.31
2	61604.19	14	56355.96
3	61166.83	15	55918.61
4	60729.48	16	55481.26
5	60292.13	17	55043.9
6	59854.78	18	54606.55
7	59417.43	19	54169.2
8	58980.07	20	53731.85
9	58542.72		
10	58105.37		
11	57668.02		
12	57230.66		

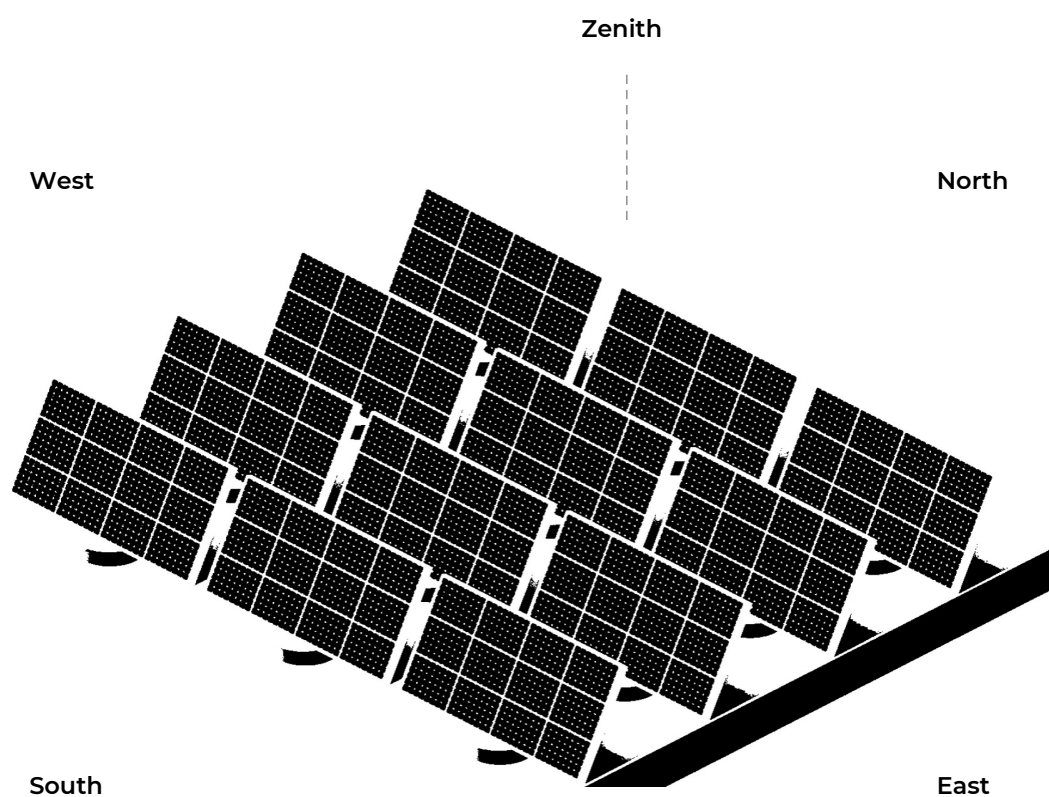
Technical & Design Report  
50 MW Solar PV Project based in Lisbon, Portugal.  
June, 2021

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<b>Project Name:</b>	Lincoln Solar Farm	<b>Irradiance/yr:</b>	1,634.66 kWh/m2/yr
<b>Location:</b>	Lisbon, Portugal	<b>Nb of Modules:</b>	147,058 PV Modules

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Perspective of the PV-Field (Fixed Tilt)





**Balance Sheet**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

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**Balance Sheet**

**Sep 2022 - Aug 2042**

	<b>Notes</b>	<b>€ (EUR)</b>
<b>Project Cost</b>	<b>(48,000,000)</b>	
<b>Total Revenue</b>		112,342,607.34
<b>Operation and Maintenance</b>		(6,605,701.2)
<b>Adjustments</b>		9,600,000.0
<b>EBITDA</b>		115,336,906.14
<b>CFADS</b>		115,336,906.14
<b>Interest</b>		(6,707,791.97)
<b>Fees</b>		(73,235.49)
<b>Principal</b>		(28,800,000.0)
<b>Cash Sweep</b>		(9,796,991.2)
<b>Tax Facility</b>		(15,951,175.74)
<b>Net Profit (CFADS)</b>		63,804,702.95
<b>Cash Available to Equity</b>		63,804,702.95

**Balance Sheet**  
**50 MW Solar PV Project based in Lisbon, Portugal.**  
**June, 2021**

**20 yr. Operational Lifecycle (€)**

Year	CFADS	Expenditure	Expected Cashflow
Sep 2022-Aug 2023	5,760,452.46	3,998,313.85	1,762,138.61
Sep 2023-Aug 2024	5,672,606.13	3,980,800.58	1,691,805.55
Sep 2024-Aug 2025	5,627,152.96	3,971,766.51	1,655,386.45
Sep 2025-Aug 2026	5,581,669.5	3,962,726.94	1,618,942.55
Sep 2026-Aug 2027	5,536,155.43	3,953,681.82	1,582,473.6
Sep 2027-Aug 2028	5,490,610.45	3,944,631.1	1,545,979.34
Sep 2028-Aug 2029	5,445,034.25	3,935,574.72	1,509,459.53
Sep 2029-Aug 2030	5,399,426.52	3,926,512.62	1,472,913.9
Sep 2030-Aug 2031	5,353,786.95	3,917,444.74	1,436,342.2
Sep 2031-Aug 2032	5,308,115.21	3,908,371.04	1,399,744.17
Sep 2032-Aug 2033	5,262,410.99	1,052,482.2	4,209,928.79
Sep 2033-Aug 2034	5,216,673.95	1,043,334.79	4,173,339.16
Sep 2034-Aug 2035	5,170,903.78	1,034,180.76	4,136,723.03
Sep 2035-Aug 2036	5,125,100.14	1,025,020.03	4,100,080.11
Sep 2036-Aug 2037	5,079,262.69	1,015,852.54	4,063,410.15
Sep 2037-Aug 2038	5,033,391.1	1,006,678.22	4,026,712.88
Sep 2038-Aug 2039	4,987,485.03	997,497.01	3,989,988.02
Sep 2039-Aug 2040	4,941,544.12	988,308.82	3,953,235.3
Sep 2040-Aug 2041	4,895,568.04	979,113.61	3,916,454.44
Sep 2041-Aug 2042	14,449,556.43	2,889,911.29	11,559,645.15

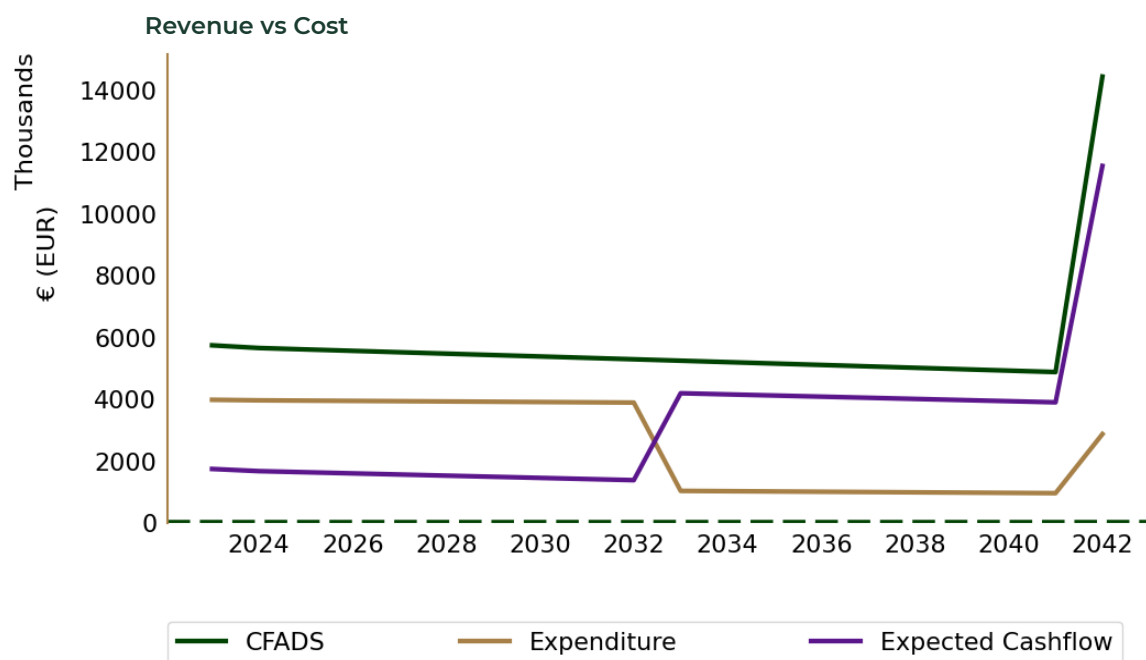
**General Information**

Expenditure represents Interest, fees, principal and tax.

Expenditure  
50 MW Solar PV Project based in Lisbon, Portugal.  
June, 2021

### Graphical Representation

The graphical illustration shown in this section represents the Revenue vs Cost forecast for the entire project lifecycle.



### **Cash Available to Equity**

This is what an investor or company expects to realize from the solar project after all expenses have been deducted.

### **Electricity Regulatory Fee**

Electricity regulatory are charges usually issued by the electricity regulatory board or electricity distribution company responsible for transmitting your electricity.

### **Financial Close**

Financial close occurs when all the project and funding agreements have been signed, all the terms of such agreements have been met, and the private party to the PPP will start drawing up the financing to start construction on the project.

### **Irradiance**

The amount of sunlight energy (also known as solar radiant energy) incident on per unit area at a specific time is called solar irradiance. Solar irradiance delivered to the earth is both intermittent and differs from place to place, thus some areas of the earth receive a higher solar irradiance values compared to others.

### **Levelized Cost of Energy**

The levelized energy cost (LCOE) is a measure of a power source which allows a consistent comparison of different methods of generating electricity. Additionally, the LCOE may be viewed as the minimum constant price at which energy must be sold to break even over the lifetime of the plant. This can be measured as the net present value of all asset lifetime costs divided by a suitably discounted average of the asset's energy output over that lifetime.

### **LIBOR**

LIBOR, the acronym for the London Interbank Offer Rate, is the global reference rate for unsecured short-term borrowing on the interbank market.

### **Maturity Date**

Maturity date refers to a finite time period at the end of which the financial instrument will cease to exist and the principal is repaid with interest.

### **P50, P90 and P95 Electricity Generation**

P50, P90 and P95 represent different electricity yield levels, for which the probability that the production of a particular year is over this value is 50%, 90% and 95% respectively.

### **Salvage Value**

Salvage value is an estimated amount that is expected to be received at the end of an asset's useful life.

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