Anexo I. Registro del Título del Trabajo Fin de Grado (TFG)

NOMBRE DEL ALUMNO: Álvaro Alonso Martínez de Salinas

PROGRAMA: MII+ADE GRUPO: X FECHA: 03/05/2024

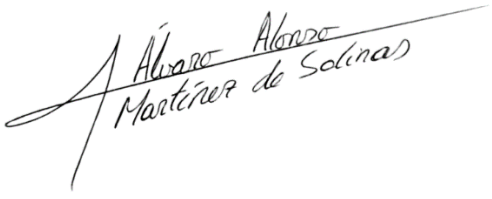
Director Asignado: Fernández Alonso (Apellidos), Daniel (Nombre)

Título provisional del TFG: Value Creation in Brownfield Solar Power Plant via Refinancing

The Bachelor's Thesis focuses on the refinancing of an operational solar farm, with the objective of generating sufficient cash flow to distribute dividends to investors and improve the asset's initial base case expectations. This study aims to optimize the financial structure of the solar farm by taking advantage of favorable market conditions to negotiate a new loan under more advantageous terms. The project includes an analysis of the current financial situation, alongside projections of future revenues and expenses, to determine the feasibility and impact of the proposed refinancing.

ADJUNTAR PROPUESTA (máximo 4 páginas: Índice provisional, objetivos, metodología y bibliografía)

Firma del estudiante:



Fecha: 03/05/2024

Faculty of Economic and Business Sciences

ICADE

Bachelor's Thesis

Value Creation in Brownfield Solar Power Plant via Refinancing

Author: Álvaro Alonso Martínez de Salinas

Supervisor: Daniel Fernández Alonso

September 2024

Madrid

INDEX

1. PROVISIONAL INDEX

2. OBJECTIVES

The main objective of the bachelor's thesis is to determine whether refinancing a brownfield solar farm is beneficial, assessing whether it is advantageous for shareholders to restructure the debt. To achieve this, a series of more specific objectives are proposed to further clarify the purpose of the study:

- **Analyze different options to increase profitability:**
  - Collect information on Project Finance: Investigate the theoretical and practical fundamentals of Project Finance, focusing on its specific application to solar energy projects.
  - Describe the different phases of a solar farm and their implications for risk and profitability: Detail each stage of a solar farm's lifecycle, from planning and construction to operation and maintenance, identifying risks and profitability opportunities at each phase.
- **Identify the advantages and disadvantages of refinancing:**
  - Evaluate the motivations and reasons behind the refinancing of brownfield solar projects: Analyze the economic, financial, and strategic motivations that lead developers and financiers to consider refinancing as a viable option, based on case studies and existing literature.
  - Conduct a detailed study on the potential benefits for project shareholders: Investigate how refinancing can enhance profitability, reduce financial risk, and increase shareholder value through financial metrics and comparative analysis.
- **Analyze the profitability of the base case:**
  - Develop a financial model in Excel representing the project's financial structure: Create a detailed financial model that includes all relevant variables such as construction costs, expected revenues, operating costs, and financing conditions. This model must be able to simulate various financial scenarios.
  - Calculate and analyze cash flow and project valuation in the base scenario: Perform financial projections for the project under the original, non-refinanced scenario, assessing its viability and profitability through cash flow analysis, Net Present Value (NPV), and Internal Rate of Return (IRR).
- **Analyze the profitability of the refinancing case:**
  - Calculate and analyze cash flow and project valuation in the refinancing scenario: Simulate a refinancing scenario, adjusting loan terms and other financial parameters, and evaluate the impact on cash flow and project valuation. Compare these results with the base scenario.
- **Compare differences between both cases:**
  - Compare the cash flows of both scenarios and calculate the Net Value of Refinancing: Compare the results of the base and refinancing scenarios, calculating the Net Value of Refinancing to determine whether this option represents a financial improvement or detriment.

- Identify and determine the specific cases where refinancing a Brownfield solar project is beneficial: Based on financial and comparative analyses, establish clear criteria to determine when refinancing is advantageous and when it may not be recommended.

3. METHODOLOGY

The methodology used in this thesis provides a systematic and structured approach to evaluating an existing solar farm. This analysis will include:

- Development of a financial model in Excel: Create a financial model in Excel that reflects the current situation of the solar farm, based on real operating and financing data.
- Cash Flow Analysis using a DCF model: Use the financial model to project future cash flows, evaluating the long-term profitability of the solar farm under current conditions.
- Evaluation of refinancing through sensitivity analysis: Analyze how different refinancing strategies can improve the solar farm's debt structure, increasing financial efficiency and reducing costs.

3.1 TYPE OF RESEARCH

The research will be conducted using a combination of qualitative and quantitative methods to provide a comprehensive view of the solar farm:

- Quantitative research: Numerical data will be used to generate concrete projections and analyses, providing an objective basis for decision-making.
- Qualitative research: Data will be analyzed in a broader context, considering qualitative variables that may influence the project's viability.

The research is classified as analytical, focusing on evaluating the solar farm's current financial data and modeling various hypotheses about the impact of refinancing on its financial structure.

3.2 ANALYSIS TOOLS AND TECHNIQUES

Microsoft Excel will be the main tool for financial modeling due to its flexibility in financial modeling. Analysis techniques will include:

- Development of a financial model in Excel reflecting the solar farm's current situation, based on real operational and financial data.
- Amortization tables for detailing the debt repayment structure.
- Cash Flow Analysis using a DCF model to project long-term cash flows and assess the solar farm's sustainability and profitability under current conditions.
- Evaluation of refinancing through sensitivity analysis to assess how different refinancing strategies can improve the solar farm's financial structure, enhancing its financial efficiency and reducing costs.
- Financial performance indicators to measure the efficiency and feasibility of refinancing.

3.3 DATA SOURCES

Data will be sourced from two main categories:

- Primary data: Provided directly by ENGIE Spain, including operational and financial information about the solar farm. This data allows for a precise and up-to-date analysis of the project.
- Secondary data: Collected from existing literature on renewable energy project financing, including books and academic articles that offer a theoretical framework for interpreting the data in the broader context of the energy sector.

4. BIBLIOGRAPHY

Project Finance Approach

- Yescombe, E. R. (2014). *Principles of Project Finance*. Academic Press.
- Gatti, Stefano (2018). *Project Finance in Theory and Practice*. Academic Press.
- Lynch, Penelope (2019). *Financial Modelling for Project Finance*. CreateSpace Independent Publishing Platform.
- Finnerty, John D. (2013). *Project Financing: Asset-Based Financial Engineering*. Wiley Finance.

Focus on Renewable Energy

- Groobey, Chris, Pierce, John, Faber, Michael, and Broome, Greg (2010). *Project Finance Primer for Renewable Energy and Clean Tech Projects*. Public-Private Infrastructure Advisory Facility (PPIAF).
- Raikar, Santosh and Adamson, Seabron (2020). *Renewable Energy Finance: Theory and Practice*. Academic Press.