



SolarSense Solutions

High-Level Feasibility Study

Submitted to:

The Ministry of Digital Economy and Entrepreneurship

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Founders and investors considering this project are advised to conduct further analysis on projected adoption rates, development costs, and ongoing operational expenses. This additional scrutiny will help mitigate potential risks related to technology challenges, changes in regulations, market penetration, and competitive pressures.

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A National Entrepreneurship Policy Project



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Executive Summary

SolarSense Financial Advisory is a platform offering detailed financial analyses and feasibility assessments for solar photovoltaic (PV) system installations. Addressing the critical gap left by preliminary studies from energy companies, SolarSense uses advanced financial modeling to provide comprehensive evaluations, helping prevent unrealistic expectations for end-users. The renewable energy market in Jordan, particularly solar PV systems, is growing rapidly. However, there is a significant need for accurate and detailed feasibility assessments to support informed investment decisions. SolarSense fills this gap by gathering essential data from users, validating proposed system capacities, and using sophisticated algorithms to evaluate project feasibility and key financial metrics like Net Present Value (NPV) and Internal Rate of Return (IRR). The platform offers tailored financial recommendations, enabling users to make informed decisions about solar investments.

The potential benefits of SolarSense include providing users with precise data analysis, reliable projections through advanced financial modeling, and a user-friendly interface delivering actionable insights. Designed for scalability, SolarSense can collaborate with energy companies to offer bundled services and evolve into an online marketplace, connecting customers with trusted energy companies and financing options. This approach not only supports the adoption of solar energy but also promotes sustainable development across various sectors in Jordan.

I. Introduction

SolarSense Financial advisory is a platform that conducts detailed financial analyses and feasibility assessments for solar photovoltaic (PV) system installations. Unlike the preliminary studies typically provided by PV companies or installers, which often rely on simple payback period calculations, SolarSense uses advanced financial modelling to deliver comprehensive evaluations. This approach helps prevent the common issue of expectations not matching reality for end-users.

The renewable energy market, particularly solar PV systems, has seen significant growth. However, a critical gap exists in the market for detailed and accurate feasibility assessments. Energy companies and system designers typically provide preliminary studies based on simple payback periods. This simple analysis does not account for the comprehensive financial picture, leading to unrealistic expectations for end-users and investors.

Jordan, heavily dependent on imported energy, faces significant energy efficiency and renewable integration challenges. In 2021, renewable energy constitutes only about 15% of the total energy. Despite ambitious targets set by national strategies, the adoption of renewable energy technologies, especially in heating and cooling for buildings, remains limited.

The lack of accurate and comprehensive feasibility studies has several implications. Misaligned expectations often arise, with investors and end-users harbouring unrealistic views about the returns and benefits of their solar PV installations. Financial risks are heightened without

detailed financial analysis. Furthermore, the uncertainty and perceived risk associated with incomplete feasibility assessments can lead to market hesitation, slowing the adoption of renewable energy technologies. The impact on the target market, including small to medium-sized businesses, homeowners, and commercial property owners, is significant. These groups need reliable data and thorough financial insights to make informed decisions about investing in solar PV systems.

SolarSense Financial Advisory addresses this critical gap by offering a comprehensive platform for detailed financial analysis and feasibility assessments of solar PV system installations. The platform's process involves gathering essential data from users, including energy records, electricity tariffs, and site conditions. It validates the actual system capacity proposed by energy companies or system designs and uses advanced algorithms and financial models to evaluate the project's feasibility and calculate key financial metrics such as Net Present Value (NPV) and Internal Rate of Return (IRR). Based on the analysis results, SolarSense provides users with tailored financial recommendations.

The potential benefits of SolarSense include empowering users with precise and comprehensive data analysis, enabling informed investment decisions, and providing more reliable projections through sophisticated financial modelling, thereby reducing the risk of financial losses. Additionally, the integration of advanced analytics and a user-friendly interface enhances the overall user experience by delivering actionable insights.

SolarSense is designed with scalability in mind. It can collaborate with energy companies or system designers to offer bundled services, expanding its customer base and creating synergies. The platform has the potential to evolve into an online marketplace, connecting customers with trusted energy companies and financing options. Scaling up automated processes and advanced analytics allows for expansion without proportional increases in operational costs. Furthermore, standardised methods for data analysis and reporting enable replication across different markets, reducing complexity during expansion.

2. Market Analysis

Jordan's economy is heavily reliant on imported energy sources, with oil and gas making up 88.5% of its total energy consumption in 2021, costing approximately JOD 1,858 million¹. This dependency exposes the economy to global market fluctuations, impacting energy prices and overall economic stability. Therefore, shifting towards renewable energy is critical for both economic and environmental stability.

Jordan has set ambitious targets under its National Energy Strategy for 2020-2030, aiming to increase the share of renewable energy in the energy mix from 13% in 2019 to 50% by 2030². In 2022, renewable energy sources such as solar and wind contributed 23% of the total electricity generation³.

¹ <https://www.iea.org/countries/jordan>

² <https://www.trade.gov/country-commercial-guides/jordan-renewable-energy#:~:text=Solar%20or%20wind%20energy%20powers,development%20and%20energy%20storage%20projects.>

³ <https://www.iea.org/countries/jordan>

The renewable energy sector in Jordan shows significant growth potential, supported by government initiatives like the National Energy Action Plan (NREAP) and the National Energy Efficiency Action Plan (NEEAP). These plans aim to promote renewable energy adoption and increase energy efficiency across various sectors.

The overall economic climate in Jordan presents both opportunities and challenges for start-ups like SolarSense. The country’s focus on renewable energy and sustainability, driven by government policies and international commitments, creates a favourable environment for new ventures in the renewable energy sector. However, economic volatility and external pressures can pose risks.

The renewable energy industry in Jordan is poised for significant growth. Beginning from a negligible base in 2012, investments into the renewable energy sector in Jordan rose to USD 4 billion in 2023⁴.

With about 300 sunny days in Jordan, the country’s geographic location offers abundant solar resources, making solar PV systems an attractive option for households, commercial buildings, and industrial establishments. The figure below shows electric generation trends in Jordan from 2011 to 2021⁵ and demonstrates continued significant growth in solar PV, with solar becoming the dominant renewable source, followed by onshore wind.

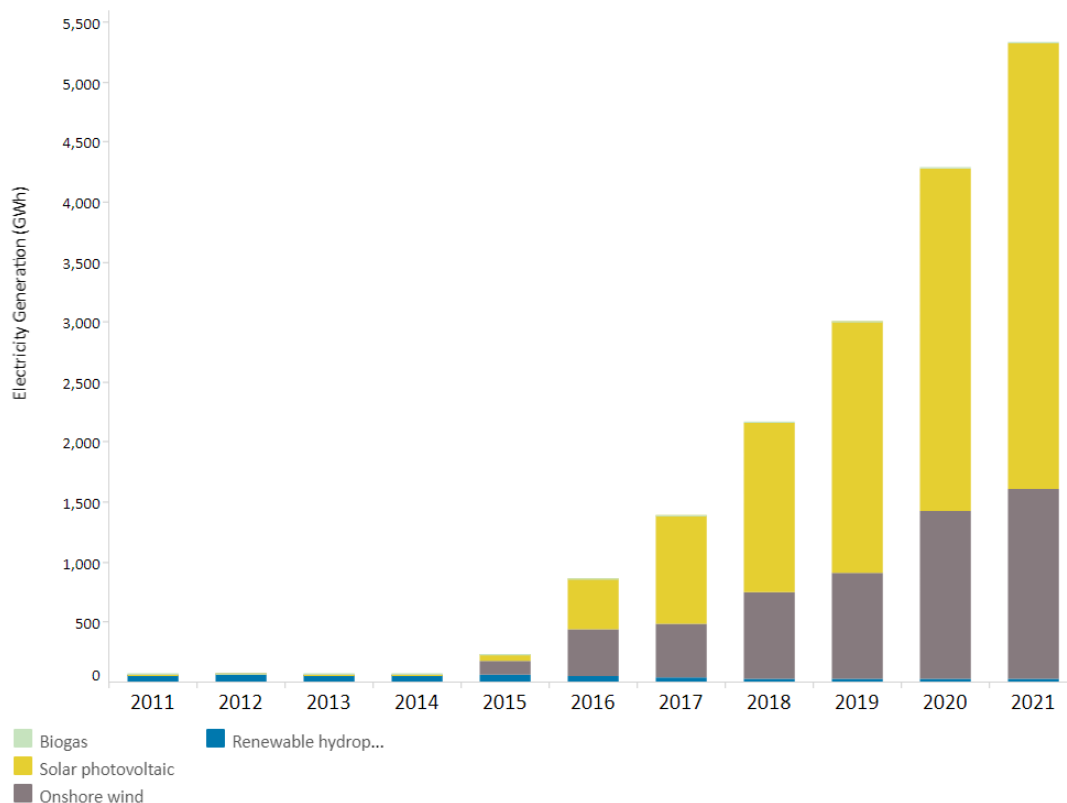


Figure 1: Electric Generation in Jordan (Source: IRENA)

⁴ <https://www.ifc.org/en/stories/2023/powering-up-jordan-s-renewable-energy-market>

⁵ <https://www.irena.org/Energy-Transition/Technology/Solar-energy>

The competitive landscape for renewable energy solutions in Jordan includes various local and international players. However, there is a distinct lack of comprehensive financial advisory services specifically tailored for solar PV projects. SolarSense's unique value proposition - combining data-driven analysis, sophisticated financial modelling, and personalised recommendations - differentiates it from other market offerings.

The regulatory environment in Jordan is highly supportive of renewable energy development. The Renewable Energy and Energy Efficiency Law of 2012 and subsequent amendments have established a favourable framework for investments in the sector. Policies promoting renewable energy and energy efficiency are well-aligned with the objectives of SolarSense, facilitating its market entry and expansion.

Several key economic indicators are relevant to the success of SolarSense in Jordan:

- **Energy Consumption:** Jordan's electricity consumption has been steadily increasing, reaching 19,306 GWh in 2021. This growing demand underscores the need for efficient and reliable energy solutions.
- **Installed Renewable Energy Capacity:** The increasing capacity of renewable energy installations, particularly solar PV systems, indicates a strong market for SolarSense's services.
- **Government Targets:** The targets set by the Jordanian government for renewable energy in the energy mix provide a conducive environment for market growth.
- **Investment in Smart Grids and Storage:** Ongoing and planned investments in smart grid technologies and energy storage solutions are crucial for integrating renewable energy and ensuring grid stability.
- **Economic Stability and Growth:** Despite economic challenges, Jordan's commitment to economic reforms and attracting investments plays an important role in maintaining a stable business environment.

SolarSense Financial Advisory targets small to medium-sized businesses, homeowners, and commercial property owners interested in investing in solar photovoltaic (PV) systems. The platform also appeals to renewable energy enthusiasts, sustainability advocates, and financial professionals seeking comprehensive insights into solar energy investments. Homeowners, typically individuals or families, are interested in reducing their energy bills and to some extent their carbon footprint. Small to medium-sized businesses across various sectors such as retail, manufacturing, and services are looking to cut operational costs and improve sustainability. Commercial property owners including larger spaces aim to enhance their properties' energy efficiency and market value. Renewable energy enthusiasts are individuals passionate about sustainable energy and early adopters of renewable technologies. Financial professionals, including investors and financial advisors, require detailed financial analysis and feasibility assessments to make informed decisions about renewable energy projects.

SolarSense segments the market based on the size of the solar PV system:

- **Residential (up to 10kW):** Targeting homeowners who want to reduce energy bills and carbon footprint.

- Commercial mid-size (up to 100kW): Targeting small to medium-sized businesses looking to reduce operational costs and improve sustainability.
- Commercial Large size (up to 300kW): Targeting larger commercial properties aiming to enhance energy efficiency and market value.

As such, SolarSense can effectively address the specific needs and preferences of each customer's group. Projects larger than 300kW will typically see owners hire a specialised team to handle the study and lie outside the scope of SolarSense.

A household survey conducted by Germany's Research Institute for Sustainability - Helmholtz Centre Potsdam (RIFS) found that people in Jordan overwhelmingly support an energy transition, with 91% of respondents expressing support for the expansion of renewable energy in the country.

The growth of the renewable energy industry in Jordan is largely attributed to rising electricity costs and supportive government policies. Aside from large scale projects upwards of 300 MW, there is significant potential for small-scale solar installations, with rooftop solar expected to account for up to 1.4 GW of solar energy capacity in Jordan by 2030⁶. This growth presents a valuable opportunity for households and businesses to generate their own electricity and reduce their reliance on the grid.

In terms of price sensitivity, both businesses and homeowners in Jordan are highly conscious of the upfront costs associated with solar PV installations. Financial incentives, subsidies, and low-interest financing options play a crucial role in influencing purchasing decisions. Customers are generally willing to invest in higher-cost solutions if they are convinced in the long-term savings and return on investment (ROI). This cost-conscious yet value-driven market environment underscores the importance of detailed financial analysis and feasibility assessments, such as those provided by SolarSense to support informed decision-making and optimise investment outcomes.

The competitive landscape for renewable energy solutions in Jordan includes local PV installers, international renewable energy consultants, and financial advisory firms. Local PV installers benefit from established relationships with customers, local market knowledge, and hands-on installation services, but often provide preliminary studies based on simple payback periods. SolarSense may work in partnership with these companies by helping them demonstrate the true value of their proposals to potential customers, enabling them to develop proposals backed by sound technical and financial advice. International renewable energy consultants or large-scale local companies offer advanced technical expertise, access to global best practices, and comprehensive service offerings, but they tend to have high costs. Financial advisory firms bring expertise in financial modelling and investment analysis, but may not specialise in renewable energy projects, resulting in less tailored advice for solar PV investments.

⁶ [The Future Looks Bright for Solar Energy in Jordan: A 2023 Outlook - SolarQuarter](#)

3. Business Model

SolarSense Financial Advisory provides a suite of services designed to support informed investment decisions in solar PV systems. The business model focuses on delivering value through detailed financial and technical analysis, and personalised recommendations.

SolarSense offers comprehensive financial analysis and feasibility assessments for solar PV systems. By leveraging modelling software and algorithms, SolarSense evaluates the viability of solar projects, ensuring users have a clear understanding of potential returns and risks.

The platform provides personalised financial recommendations based on in-depth analysis. These recommendations are tailored to individual project specifications, helping users make informed decisions.

SolarSense enhances the credibility of local PV installers by validating their proposals with sound technical and financial advice. By working in partnership with these installers, SolarSense helps them solidify their proposals to potential customers, thereby facilitating more successful project implementation.

The platform also facilitates access to information about financial incentives and favourable loan conditions to customers. By guiding users through the availability of various incentive programs and helping them identify the most applicable ones, SolarSense makes solar PV systems more financially accessible and attractive.

In addition to financial recommendations, SolarSense provides technical recommendations for the optimal PV system(s) based on the current and future projected consumption of the customers, the space available, storage capacity (if any), geographical location, and other relevant factors. This ensures customers receive a tailored solution that meets their specific energy needs.

SolarSense's platform has the potential to evolve into an online marketplace, connecting customers with trusted energy companies and financing options. This evolution can create a comprehensive ecosystem where users find reliable partners for their renewable energy projects and access various financing solutions, enhancing the overall value proposition of SolarSense.

As mentioned previously, the target market includes homeowners, small to medium-sized businesses, and commercial/industrial property owners looking to enhance energy efficiency and reduce energy bills.

Services are offered through an easy-to-use website. The platform asks customers to input their requirements based on selection menus and inputs about their electricity consumption, budget, geographical location, and all other relevant factors. The website then automatically generates a preliminary report based on the data provided by the customers. Customers can pay for the full report, priced according to the project size tier, via online payments. Once payment is made, the platform automatically generates the detailed report. The report template and requirements are automatically generated using APIs connected to Large Language Models that access a database containing various scenarios and generate recommended options from present system designs.

Personalised customer support is maintained through the platform, offering detailed reports and insights tailored to individual user needs. Ongoing engagement with customers is ensured through direct marketing and educational content on the website, fostering long-term relationships and customer loyalty.

Revenue is generated through three pricing tiers based on the size of the project - residential (up to 10 kW), commercial/industrial mid-size (up to 100 kW), and commercial/industrial large-size (up to 300 kW). The fee for each tier represents 1 - 2% of the project value. Additionally, further commissions can be earned from partnerships with local energy companies for successful project implementations facilitated by SolarSense's recommendations.

Key activities include data collection and analysis from users, system capacity verification and feasibility assessments, financial modelling, and calculation of key metrics, and providing personalised financial and technical recommendations. To achieve that, the team must gather a diverse collection of project information, technical and product literature, financing schemes, incentive programs, regulations, and customer data to train the Large Language Model (LLM). The LLM must learn the processes for financial and technical analysis, system options, and relevant technical knowledge. The LLM is then able to suggest appropriate financial and technical scenarios considering the technical guidelines and customer specifics. This requires the use of a powerful language model like GPT-4 or similar for project diagnosis and recommendations, a backend system for handling API requests and responses, and a front-end component to design and deliver a user-friendly interface.

Key resources include advanced modelling software, data analytics tools for energy consumption and tariff analysis, and APIs connected to Large Language Models. The platform's skilled team of analysts and experts is crucial resources. Partnerships with local PV installers and manufacturers as well as financial institutions also play a vital role in the business model.

Primary costs involve the development and maintenance of the online platform, salaries and operational costs for the team, marketing and customer acquisition expenses and costs associated with partnerships and collaborations. Additionally, significant resources are allocated to inputting a large amount of data into the system and conducting extensive testing before deployment.

The success of SolarSense hinges on the expertise and collaboration of its dedicated team members, each fulfilling crucial roles to ensure the platform's operation and growth. The CEO/Founder and Technical Lead oversees the overall strategy, partnerships, and the platform's technical infrastructure. The Platform Developer ensures the platform is functional, user-friendly, and scalable. The Financial Advisor handles financial modelling, feasibility assessments, and report generation. The Data Analyst collects and analyses data, while the data entry resources input the large amounts of data into the database and LLM. The Energy Engineer provides technical recommendations for optimal PV system design.

The revenue projection table outlines the anticipated growth in demand and revenue across different product lines over a five-year period. The analysis of percentage contributions to unit sold and revenues by product line provides a clearer picture of SolarSense’s revenue structure and growth potential. Overall, the total revenues are projected to grow from JOD 125,000 in the first year to JOD 262,500 in the fifth year, indicating growth.

Table 1: Revenue projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) 1 - Consultancy Service - Small Scale Projects – Residential	300	400	500	600	700
Price / Unit Residential	50	50	50	50	50
Sub-total Residential	15,000	20,000	25,000	30,000	35,000
Projected Demand (Quantity) 2 - Consultancy Service- Mid Size Capacity (up to 100 kW) - Commercial	100	125	150	175	200
Price / Unit Mid-Size Capacity Commercial	350	350	350	350	350
Sub-total Mid-Size Capacity Commercial	35,000	43,750	52,500	61,250	70,000
Projected Demand (Quantity) Consultancy Service - High Size Capacity (up to 300 kW) - Commercial	50	60	70	85	100
Price / Unit High Size Capacity - Commercial	1,500	1,500	1,500	1,500	1,500
Sub-total High Size Capacity - Commercial	75,000	90,000	105,000	127,500	150,000
Projected Demand (Quantity) 3 - Commission-Based Revenue	-	2	5	10	15
Price / Unit Commission-Based Revenue	-	500	500	500	500
Sub-total Commission-Based Revenue	-	1,000	2,500	5,000	7,500
Total Revenues	125,000	154,750	185,000	223,750	262,500

The revenue projections for SolarSense indicate a diversified income stream with significant contributions from different project sizes. High-size commercial projects (up to 300kW) are the dominant revenue source, accounting for 60% of total revenues in the first year, gradually maintaining around 57% by the fifth year. Mid-size commercial projects (up to 100 kW) consistently contribute around 27-28% of total revenues. Residential projects, although constituting the highest percentage of units sold (around 70-75%), contribute 12-14% to the total revenues. Commission-based revenue, while starting low, grows steadily to contribute 3% of total revenues by the fifth year. This diverse structure ensures a balanced growth trajectory and highlights the importance of each segment in SolarSense’s overall financial strategy.

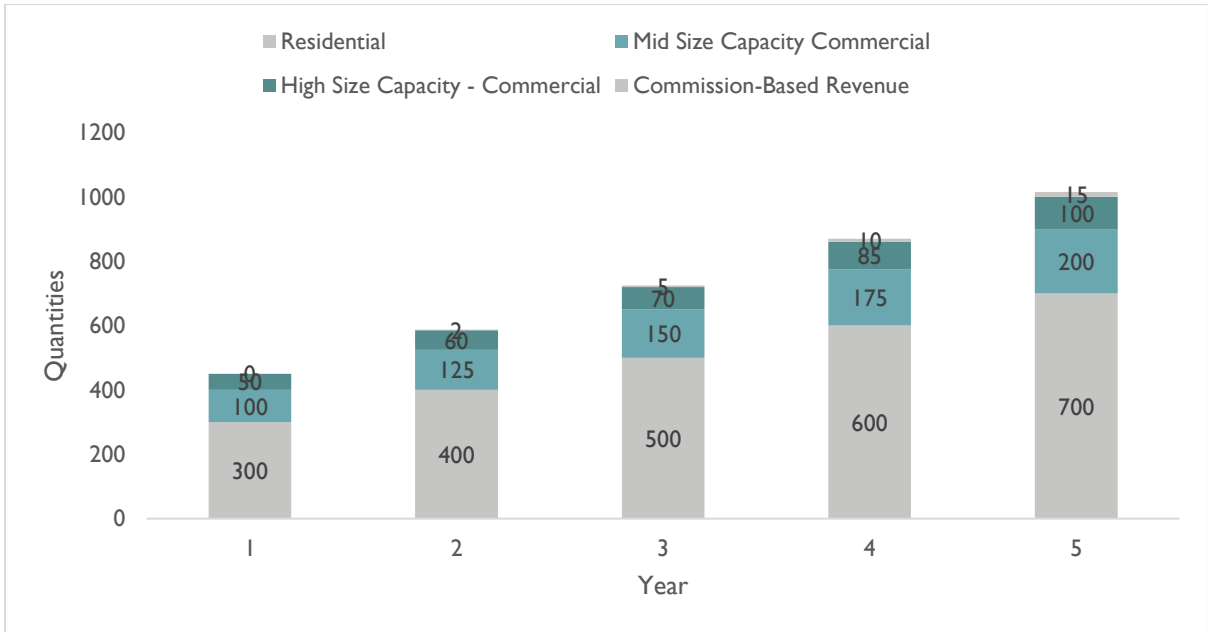


Figure 2: Product Mix by Quantity

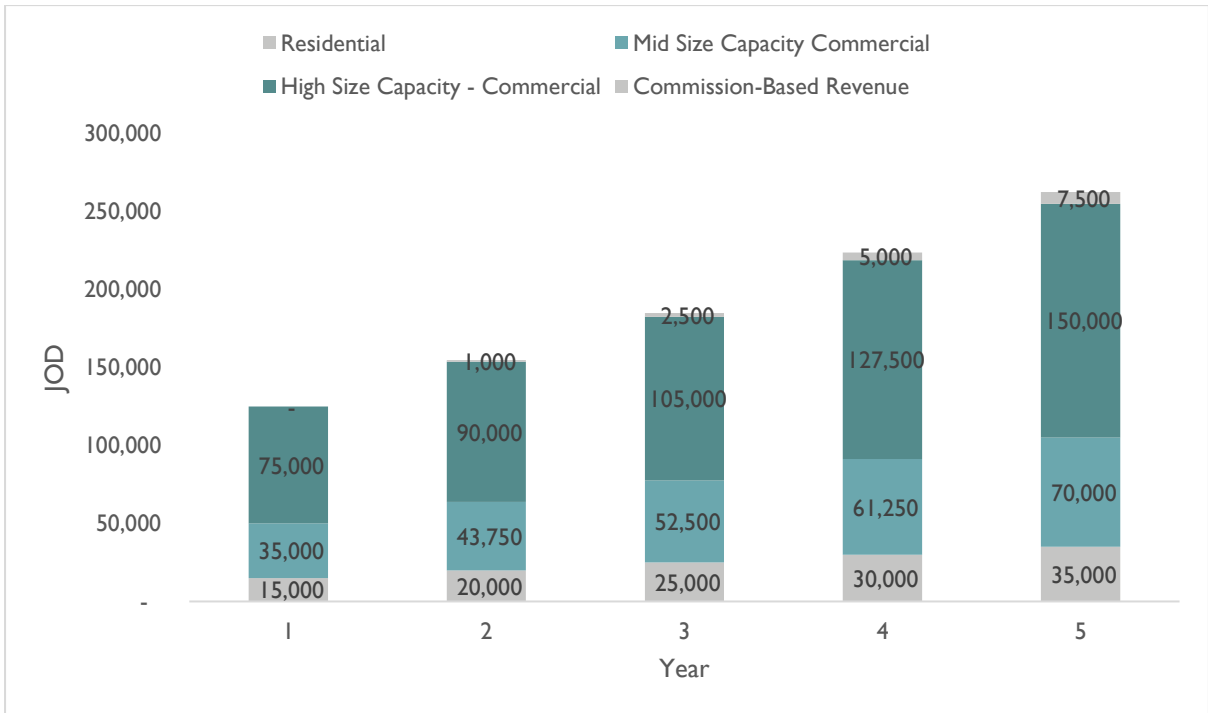


Figure 3: Product Mix by Revenue

I Technical Analysis

The Technical Analysis section details the operational aspects of SolarSense, focusing on the infrastructure and costs required to deliver its services. Notably, there are no costs of goods sold (COGS) associated with sales for SolarSense, as all costs are categorized under capital expenditures (CapEx) or operating expenses (OpEx).

The manpower table outlines the staffing requirements for SolarSense over the first five years. The team is structured to ensure that core roles are consistently filled, with slight increases in data entry personnel to handle growing data management needs. Each critical position, including the CEO/Founder, Platform Developer, Financial Advisor, Data Analyst, and Energy Engineer, remains stable, reflecting the importance of maintaining a consistent and experienced team to support SolarSense’s growth and operational effectiveness.

Table 2 : Manpower recruitment plan – five-year projection:

Title / Year	1	2	3	4	5
CEO/Founder	1	1	1	1	1
Platform Developer	1	1	1	1	1
Financial Advisor	1	1	1	1	1
Data Analyst	1	1	1	1	1
Data Entry	2	2	3	3	3
Energy Engineer	1	1	1	1	1

The manpower costs for SolarSense reflect a structured approach to staffing expenses over the first five years. The total HR salaries start at JOD 72,600 in the first year and gradually increase to JOD 101,840 by the fifth year, accounting for annual increments and additional data entry personnel. Social security and health insurance costs are also included, bringing the total HR costs to JOD 85,046 in the first year and rising to JOD 118,752 by the fifth year.

Table 3: Manpower total cost – five-year projection

Title / Year	1	2	3	4	5
CEO/Founder	18,000	18,900	19,845	20,837	21,879
Platform Developer	18,000	18,900	19,845	20,837	21,879
Financial Advisor	6,000	6,000	6,000	6,000	6,000
Data Analyst	10,200	20,808	21,224	21,649	22,082
Data Entry	12,000	12,000	18,000	18,000	18,000
Energy Engineer	8,400	9,600	10,800	10,800	12,000
Total HR Salaries	72,600	86,208	95,714	98,123	101,840
Social Security Cost	10,346	12,285	13,639	13,983	14,512
Health Insurance Cost	2,100	2,100	2,400	2,400	2,400
Total HR Cost	85,046	100,593	111,753	114,506	118,752

The operational costs, which include manpower and a contingency allowance to cover transportation costs calculated as a percentage of operational expenses, total JOD 104,330 in the first year and are projected to rise to JOD 152,405 by the fifth year.

Table 4: Operational Expenditures – five-year projection

Description / Year	1	2	3	4	5
Rental Fees	-	3,600	3,600	3,600	3,600
Electricity/Water	-	360	360	360	360
Stationary	-	360	360	360	360
Maintenance	-	500	500	500	500
Telecommunication	1,200	1,200	1,200	1,200	1,200
Website hosting fees	5,000	5,000	5,000	5,000	5,000
Advertising	1,200	2,400	2,520	2,646	2,778
Cleaning Material & Consumables	-	600	600	600	600
Hospitality Exp.	-	600	600	600	600
Legal & Accounting Fees	2,400	4,800	4,800	4,800	4,800
Sub-total OpEx	94,846	120,013	131,293	134,172	138,550
Other Costs	9,485	12,001	13,129	13,417	13,855
Total OpEx	104,330	132,014	144,423	147,589	152,405

The capital expenditures (CapEx) for SolarSense primarily focus on platform development and hardware/IT infrastructure. In the initial setup phase (Year 0), an investment of JOD 8,000 is allocated, with JOD 5,000 dedicated to platform development and JOD 3,000 for hardware and IT infrastructure. In the first year, an additional JOD 20,000 is invested in further developing and expanding the platform's capabilities. No further CapEx is projected beyond the first year, indicating a significant upfront investment to establish a robust technological foundation.

Table 5: Capital Expenditures Cost – five-year projection

Description / Year	0	1	2	3	4	5
Platform Development	5,000	20,000				
Hardware and IT Infrastructure	3,000					
Total CapEx	8,000	20,000	-			

4. Financial Analysis

6.1 Financial Study Assumptions

The feasibility study is based on the following key assumptions:

Discount Rate: The study employs a conservative discount rate of 14%, reflecting a cautious approach to valuation.

Financing Structure: The project is entirely financed by equity. This conservative approach avoids the financial leverage and thus underestimates project value, given the lower cost of debt compared to equity.

Terminal Value: The project assumes a zero-terminal value at the end of year five, aligning with the study's conservative outlook.

Cash Flow Projection: Cash flows beyond year five are excluded from the analysis, focusing on the initial project phase.

Tax Rate: The assumed tax rate of 20% complies with Jordan's income tax law.

Depreciation Rate: Capital expenditure (CapEx) is depreciated at an annual rate of 20%. Any deviation from this rate may impact projected profitability but not project feasibility, as depreciation is a non-cash expense.

Working Capital Assumptions

Operational liquidity requirements are guided by the following assumptions:

- **Cash Reserves:** The project will maintain cash equivalent to 30 days of projected annual operational expenses, ensuring robust liquidity management.
- **Accounts Receivable (A/R) Collection Period:** The average collection period for receivables is 45 days, reflecting expected credit sales conversion into cash.
- **Accounts Payable (A/P) Payment Period:** The average payment period for payables is 0 days, indicating the timeframe for settling supplier obligations.

Capital expenditures expected to be incurred in the first year were included as part of the initial costs of the project.

Provisions were made within the initial cost to cover any potential negative net free cash flow that may arise during the first five years of operation, if needed.

6.2 Financial Study:

6.2.1 Projected Working Capital

This table shows that the net working capital needed for the project in its first year of operation is JOD 24,319, which has to increase steadily year over year to reach JOD 45,513 in its fifth year. The steady increase in working capital covers the rapid rise in project operations and the increase in projected revenues.

Table 6: Working capital projection (JOD)

Description / Year	1	2	3	4	5
Cash	8,694	11,001	12,035	12,299	12,700
Accounts Receivable (A/R)	15,625	19,344	23,125	27,969	32,813
Accounts Payable (A/P)	-	-	-	-	-
Net Working Capital	24,319	30,345	35,160	40,268	45,513
Change in Working Capital		6,026	4,815	5,108	5,245

6.2.2 Project Initial Cost

The project's initial cost is projected to be JOD 52,319, comprising JOD 28,000 as CapEx and JOD 24,319 as net working capital.

Table 7: Initial Cost Summary (JOD)

Description / Year	JOD
CapEx	28,000
Net Working Capital	24,319
Total Initial Cost	52,319

6.2.3 Projected Income Statement

The projected income statement indicates that the project will earn JOD 12,056 in its first year of operation. Moreover, the net profit is expected to increase gradually over the study period, reaching JOD 83,596 in its fifth year of operation.

Table 8: Projected Income Statement (JOD)

Description / Year	1	2	3	4	5
Total Revenues	125,000	154,750	185,000	223,750	262,500
COGS	-	-	-	-	-
Gross Profit	125,000	154,750	185,000	223,750	262,500
OpEx	104,330	132,014	144,423	147,589	152,405
Net Profit Before Tax and Depreciation	20,670	22,736	40,577	76,161	110,095
Depreciation	5,600	5,600	5,600	5,600	5,600
Net Profit Before Tax	15,070	17,136	34,977	70,561	104,495
Tax Expense	3,014	3,427	6,995	14,112	20,899
Net Profit	12,056	13,709	27,982	56,449	83,596

The project is anticipated to generate a 9.6% profit margin in its first year of operation. Furthermore, the net profit margin is expected to gradually increase in subsequent years, reaching 31.8% in the fifth year of operations.

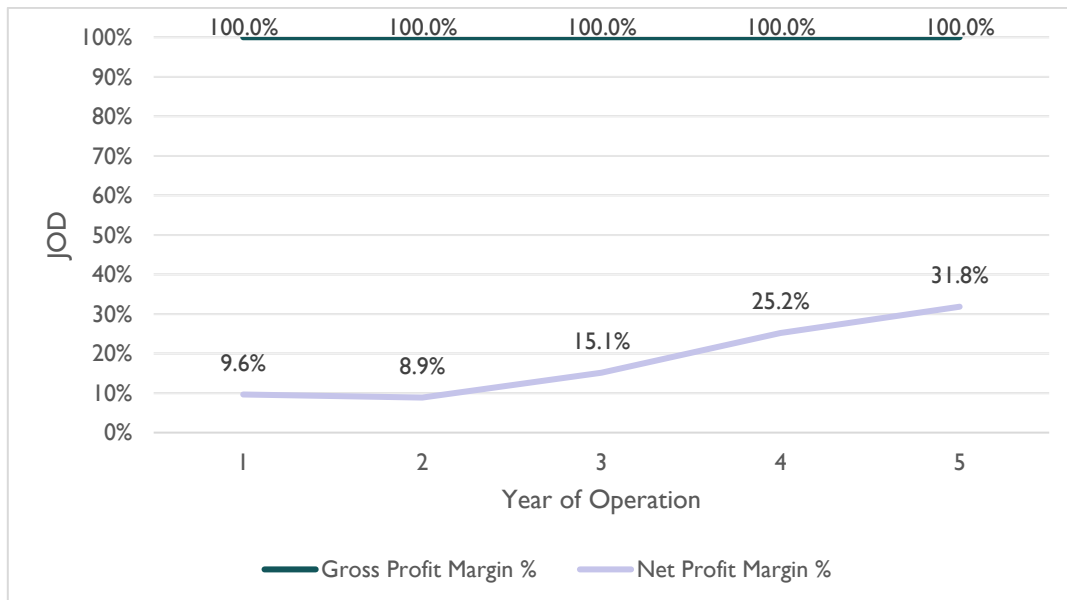


Figure 4: Gross vs Net Profit Margin

On the asset management side, the study shows that the return on investment will increase steadily from 23.0% in the first year of operation to 159.8% in the fifth year.

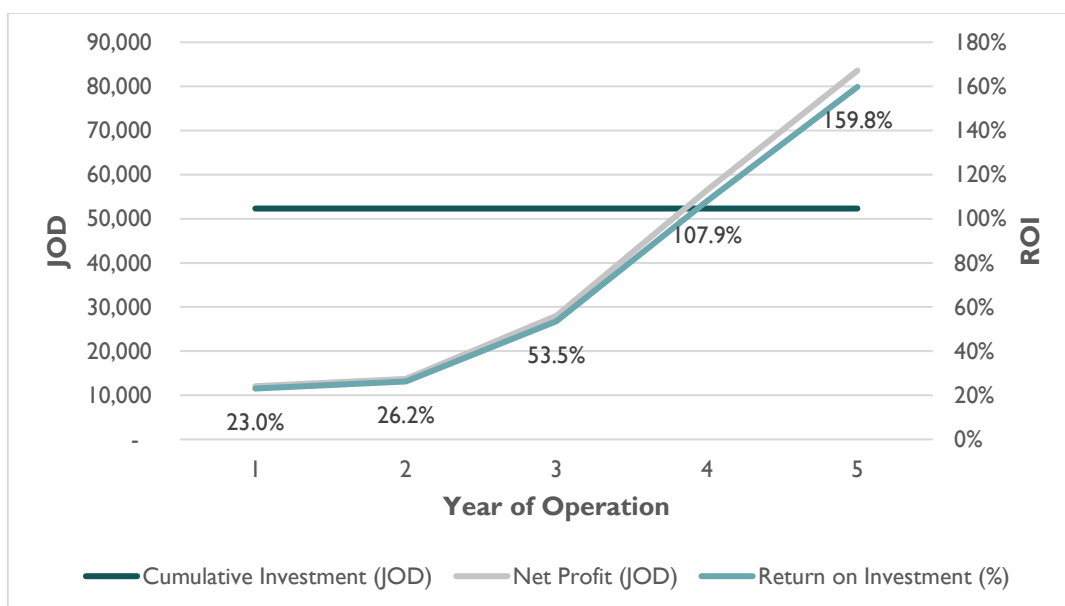


Figure 5: Return on Investment

6.2.4 Projected Free Cash Flow Statement

The table below demonstrates that the project will generate a positive free cash flow in its first year of operation, JOD 17,656. Moreover, in the following years, the free cash flow is expected to increase gradually to reach JOD 83,951 in its fifth year of operation.

Table 9 : Free Cash Flow (FCF) Projection (JOD)

Description / Year	0	1	2	3	4	5
Cash-In Flow						
Net Profit		12,056	13,709	27,982	56,449	83,596
Depreciation		5,600	5,600	5,600	5,600	5,600
Injected Capital	52,319					
Total Cash-In Flow	52,319	17,656	19,309	33,582	62,049	89,196
Cash-Out Flow						
Initial Cost	52,319		-	-	-	-
Changes in Working Capital			6,026	4,815	5,108	5,245
Total Cash-Out Flow	52,319	-	6,026	4,815	5,108	5,245
Free Cash Flow	-	17,656	13,283	28,766	56,941	83,951

Based on these results, the project's feasibility indicators demonstrate its viability, with a net present value of JOD 70,121.1 and a profitability index of 2.34. Moreover, the project's internal rate of return (IRR) is expected to be 46.39%, indicating feasibility is not sensitive to changes in market conditions.

Feasibility Indicators	
Net Present Value (NPV)	70,121
Profitability Index (PI)	2.34
Internal Rate of Return (IRR)	46.39%

6.3 Sensitivity Analysis

To assess the project's sensitivity to market conditions, a sensitivity analysis was conducted involving six unfavourable scenarios:

- Decrease projected revenues by 5% while keeping other variables constant.
- Decrease projected revenues by 10% while keeping other variables constant.
- Increase operational expenditure by 5% while keeping other variables constant.
- Increase operational expenditure by 10% while keeping other variables constant.
- Increase initial costs by 5% while keeping other variables constant.
- Increase initial costs by 10% while keeping other variables constant.

Table 10: Sensitivity analysis outcomes

Sensitivity Scenario	Net Present Value (NPV)	Profitability Index (PI)	Internal Rate of Return (IRR)
Original Case	70,121	2.34	46.39%
Drop in revenue by 5%	45,225	1.86	35.34%
Drop in revenue by 10%	20,329	1.39	23.85%
Increase in OpEx by 5%	51,260	1.97	37.62%
Increase in OpEx by 10%	32,398	1.61	28.91%
Increase in initial cost by 5%	67,505	2.23	44.14%
Increase in initial cost by 10%	64,889	2.13	42.05%

The sensitivity analysis shows that, in general, the project is feasible and not sensitive to unfavourable market conditions. The project's economic feasibility is strong and viable under all the above-mentioned scenarios. The drop in revenues has a more dramatic impact on the project viability than the increase in the OpEx or initial cost by the same magnitude. It is recommended that investors check and further study the market to ensure that the projected revenues are achievable within the thresholds of the proposed initial cost and operational expenditures.

5. Integration with Other Sectors

Integrating SolarSense with other sectors can enhance its impact and reach. Partnerships with real-estate developers can ensure that new commercial and residential buildings are designed with optimal solar PV system integration from the outset. Partnerships with the financial sector such as banks and insurance companies, can facilitate access to favourable financing options and insurance products for solar PV installations, making renewable energy investments more accessible and secure for consumers.

6. Entrepreneur Persona

The entrepreneur to lead SolarSense should possess a blend of technical, financial, and managerial expertise. A background in renewable energy, particularly solar PV systems is essential to understand the technical complexities and innovations in the industry. Strong financial acumen is crucial for developing accurate financial models and providing sound investment advice. Experience in business development and strategic partnerships will help in forming alliances with local energy companies, financial institutions, and other key stakeholders. Excellent communication skills are needed along with a visionary mindset, coupled with practical problem-solving skills. Additionally, the entrepreneur should be passionate about sustainability and committed to driving adoption of renewable energy.

7. Stakeholders

The stakeholders of the SolarSense project encompass a diverse range of individuals and organisations. Key stakeholders include customers and energy companies. Financial institutions and government agencies and regulatory bodies are stakeholders due to their influence on the market. Additionally, industry organisations and associates support knowledge sharing and advocacy for renewable energy adoption.

8. Risk Assessment and Mitigation

The following table highlights the key risks associated with SolarSense’s operations, their potential impact, the likelihood of occurrence, and the techniques to mitigate these risks.

Risk	Impact	Likelihood	Risk Mitigation Technique
Data accuracy	Misleading financial and technical assessment	Medium	Implement robust data validation and verification processes
Regulatory changes	Impact on project feasibility and economics	High	Stay informed on policy changes and adapt accordingly
Market Volatility	Fluctuations in price and rates	Medium	Use conservative financial models and maintain flexibility in plans
Technology Integration	Technical challenges in platform development	High	Conduct extensive testing and use scalable, flexible technologies
Cybersecurity Threats	Data breaches and loss of customer trust	Low	Implement strong cybersecurity measures and regular audits

To ensure the successful implementation and sustainability of SolarSense, it is crucial to address potential risks and enhance operational efficiency. Implementing robust data validation and verification processes is essential to maintain high data accuracy, preventing misleading financial and technical assessments. This will ensure that the analyses provided to customers are reliable and trustworthy. Additionally, staying informed about regulatory changes and

adapting strategies accordingly will help mitigate the impact of new policies on project feasibility and economics. This proactive approach will enable SolarSense to remain compliant and capitalize on favorable regulatory developments.

Given the medium likelihood of market volatility, it is advisable to use conservative financial models and maintain flexibility in business plans. This strategy will help SolarSense navigate fluctuations in prices and rates, ensuring financial stability. Moreover, conducting extensive testing and utilizing scalable, flexible technologies will address the high likelihood of technical challenges in platform development. Ensuring that the platform is robust and user-friendly will enhance customer satisfaction and operational efficiency. Implementing strong cybersecurity measures and regular audits will mitigate the low but critical risk of data breaches, maintaining customer trust and safeguarding sensitive information.

To further strengthen the business, SolarSense should explore partnerships with real estate developers and financial institutions. Collaborations with real estate developers can ensure that new buildings are designed for optimal solar PV integration from the outset, expanding the potential customer base. Partnerships with banks and insurance companies can facilitate access to favorable financing options and insurance products for solar PV installations, making renewable energy investments more accessible and secure for consumers. By addressing these key areas, SolarSense can enhance its market position, drive growth, and support the widespread adoption of solar energy in Jordan.

9. Conclusion

In conclusion, the project demonstrates promising feasibility indicators under very restrictive assumptions. Nonetheless, investors are advised to conduct additional analysis on projected demand, initial costs, and operational expenses to mitigate potential risks associated with adverse market conditions that could jeopardize its viability.

Disclaimer

The Ministry of Digital Economy and Entrepreneurship (MoDEE) and Istdama Consulting have prepared this report using information supplied by its advisors as well as information available in the public domain.

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Founders and investors considering this project are advised to conduct further analysis on projected adoption rates, development costs, and ongoing operational expenses. This additional scrutiny will help mitigate potential risks related to technology challenges, changes in regulations, market penetration, and competitive pressures.

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