

# First Solar, Inc. (NASDAQ: FSLR)

Fundamental Investments – Renewables & Infrastructure

Current price (04/06/2024): \$174.60 | Target Price: \$244.26 | Implied Upside: 39.90%

April 2024



# Table of Contents

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- I. Company Overview
- II. Investment Thesis
- III. Industry Landscape
- IV. Internal Analysis
  - I. Revenue Breakdown and Forecast
  - II. Operational Cost Breakdown and Forecast
  - III. Uses of Cash and Liquidity Forecast
  - IV. Debt Structure
- V. Valuation

# Company Overview

First Solar, Inc. is a leading American solar technology company providing comprehensive photovoltaic (PV) solar solutions globally, using its advanced module and system technology for an economically attractive alternative to fossil-fuel electricity generation

## Business Description & Strategy

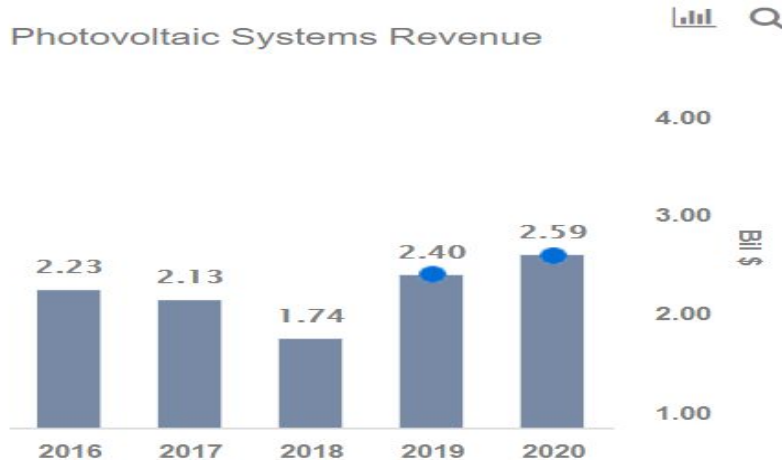
First Solar, Inc.'s business revolves around providing comprehensive photovoltaic (PV) solar energy solutions. The core of their business includes the design, manufacture, and sale of advanced cadmium telluride (CdTe) solar modules, which are known for converting sunlight into electricity for large scale solar projects. Their products are primarily targeted towards developers and operators of solar power systems, utilities, independent power producers, as well as commercial and industrial companies.

First Solar's strategic approach is distinguished by its focus on utility-scale PV systems, emphasizing markets that have an immediate need for solar energy and are less dependent on government subsidies. This strategy represents a pivot from earlier business models that relied heavily on such subsidies, particularly in European markets. By targeting sustainable markets, First Solar aims to compete directly with conventional power generators, necessitating continual advancements in manufacturing efficiency and cost reduction to remain competitive.

## Current Market Data (April 2)

<b>Mkt Cap (billion)</b>	\$17.88	<b>EV (billion)</b>	\$15.85
<b>Price</b>	\$ 174.60	<b>FY23 Rev (billion)</b>	\$3.32
<b>52 Week High</b>	\$232.00	<b>FY23 EBITDA (billion)</b>	\$1.19
<b>52 Week Low</b>	\$129.21	<b>FY23 Debt (M)</b>	\$624.39
<b>Div. Yield %</b>	0.0%	<b>EV/EBITDA</b>	13.08x
<b>Float (million)</b>	100.60	<b>P/E</b>	20.9x

## Systems Revenue



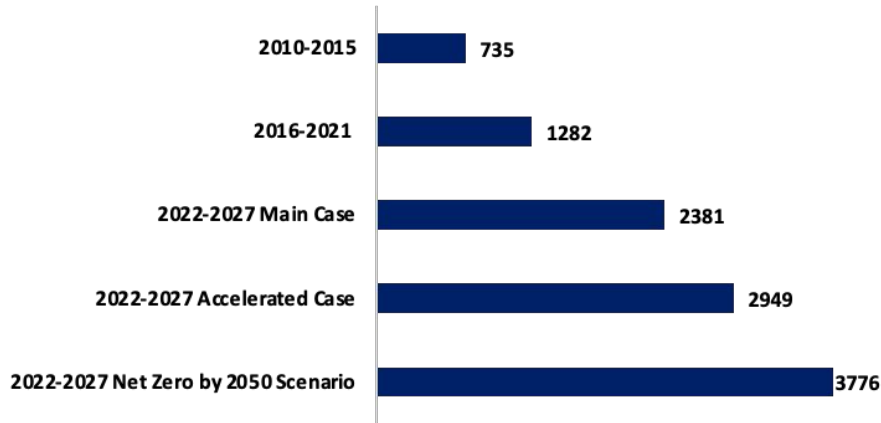
## Historic Share Price vs. Benchmark



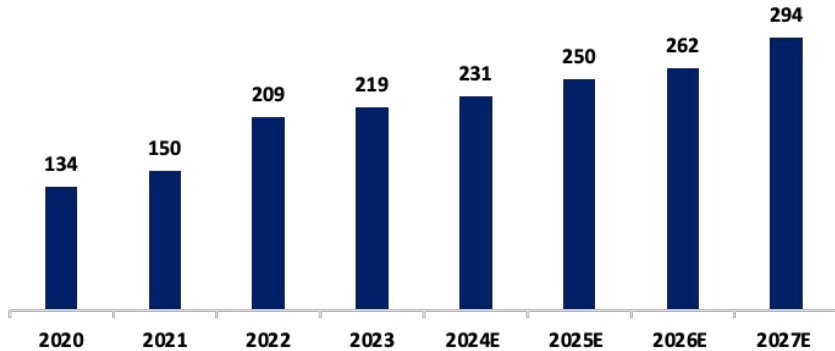
# Investment Thesis

First Solar presents growth opportunities in differentiation from competitors and a favorable macroeconomic scenario.

**Renewable Capacity Growth (GW)**







**Distributed and Utility- Scale PV Net Annual Capacity Addition (GW)**



Advanced Technology	Long-Lasting Modules	Manufacturing Excellence
<p>First Solar utilizes Cadmium Telluride ("CdTe") as their absorption layer, which uses 2%-3% of the semiconductor material used in conventional (crystalline silicon) modules.</p> <p>The CdTe technology also improves the module's performance in some environments and leads to more durable cells.</p>	<p>The company warrants that their solar panels will generate 98% of the promised output in the first year, with a degradation factor between 0.3% and 0.5% for the remaining 30-year warranty period.</p> <p>This warranty translates into superior real-world performance over crystalline silicon modules.</p>	<p>First Solar aims to expand their manufacturing capabilities, particularly as a producer of thin-film PV solar modules. They currently aim to expand their manufacturing capacity by 8 GW with 2 new facilities in the U.S. and by expanding existing ones. Moreover, the manufacturing processes are largely automated and very streamlined.</p>
Innovation	Industry Tailwinds	Economies of Scale
<p>The company has a fully vertically integrated R&amp;D process, from research and development to manufacturing and implementation, and plans to open an R&amp;D facility to produce prototypes.</p> <p>Their research cells also produce some of the highest cell efficiencies in testing.</p>	<p>Regulatory boosts, such as the Inflation Reduction Act, contribute to record-high investments in the renewable sector. Moreover, the reduction in costs to produce PV solar power generates more competitive prices. Lastly, also boosted by nearshoring, there has been high investment in supply chain operations.</p>	<p>A surge in the demand for renewable energy, particularly solar panels, has the potential to generate extensive revenue growth for First Solar. The increase in sales is critical to reduce the high costs related to constructing and maintaining large manufacturing and R&amp;D facilities.</p>

# Industry Competitors

First Solar focuses on sustainability and has the highest average selling price amongst competitors

Company	Target demographics	Size	Strengths	Weaknesses
	Utilities, commercial property owners, home builders and developers, commercial and industrial businesses	<ul style="list-style-type: none"> <li>5-8 GW produced annually</li> <li>\$0.42/Watt is average selling price</li> </ul>	Integrated manufacturing, leading thin-film technology, strong environmental focus, low Debt/EBITDA ratio	Lower efficiency compared to some crystalline silicon competitors, limited product portfolio
	Utilities, project developers, installers, distributors, commercial and industrial businesses, governments and public institutions	<ul style="list-style-type: none"> <li>15-25 GW produced annually</li> <li>\$0.33/Watt is average selling price</li> </ul>	Vertically integrated manufacturing, low cost, global reach, strong brand recognition	Dependence on Chinese market, reliant on crystalline silicon solar panels which might face competition from future advancements
	Utilities, commercial & industrial businesses, residential installers	<ul style="list-style-type: none"> <li>15-25 GW produced annually</li> <li>\$0.35/Watt is average selling price</li> </ul>	Diverse product portfolio and services	Lower brand recognition compared to some competitors, efficiency varies across products
	Utilities, project developers, distributors, commercial and industrial businesses	<ul style="list-style-type: none"> <li>15-25 GW produced annually</li> <li>\$0.38/Watt is average selling price</li> </ul>	High efficiency solar panels, strong R&D capabilities (smart technologies)	Dependence on Chinese market, focus on crystalline silicon solar panels

# Revenue Breakdown & Forecast

Revenue growth driven by increased emphasis on denting emissions and regulatory changes

## Regulatory changes drives the Renewable Landscape

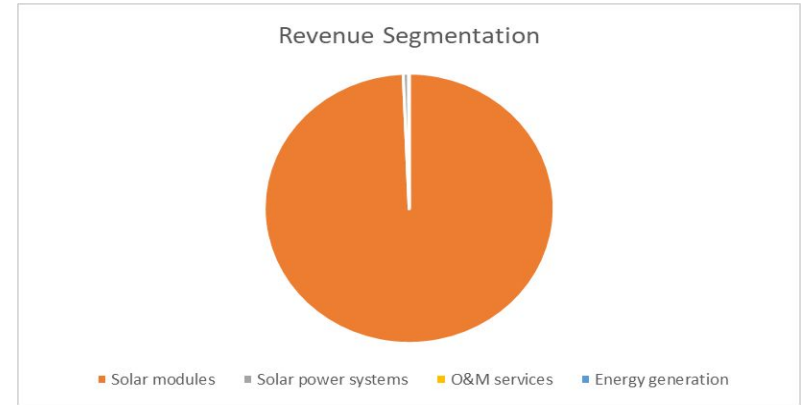
**Global Annual Renewable Capacity:** The global renewable capacity additions increased by almost 50% to nearly 510 gigawatts(GW) in 2023.

**Reshoring Supply Chains:** The clean energy industry is reshoring and as a result of high import dependence. With the recent IRA tax credits, there has been \$91 billion dollars in renewables projects in 200 manufacturing projects and other allocations.

**PV Expansion:** Solar PV and Wind power expansion are going to account for more than 90% growth due to lower generation costs compared to fossil fuel and improving regulatory outlook.

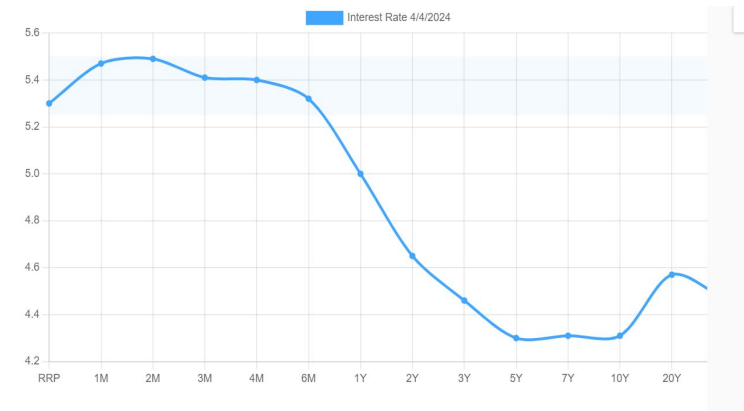
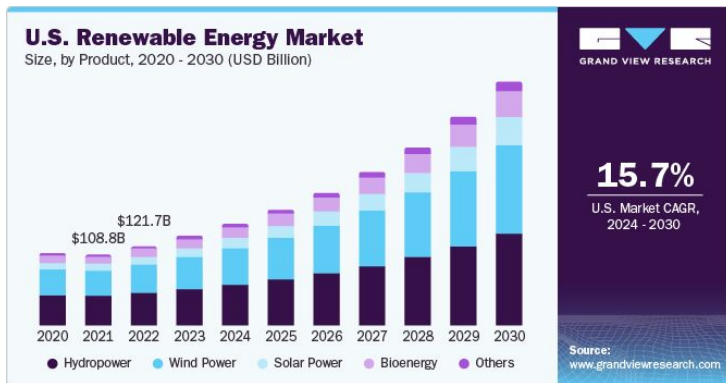
**Scope for Growth:** Expected to have a CAGR of around 15% between 2022 and 2030.

## Revenue by Segment



## Steady Growth in the Renewables Sector

## Interest Rate



# Operational Cost Breakdown

Increasing operational efficiency drives future value

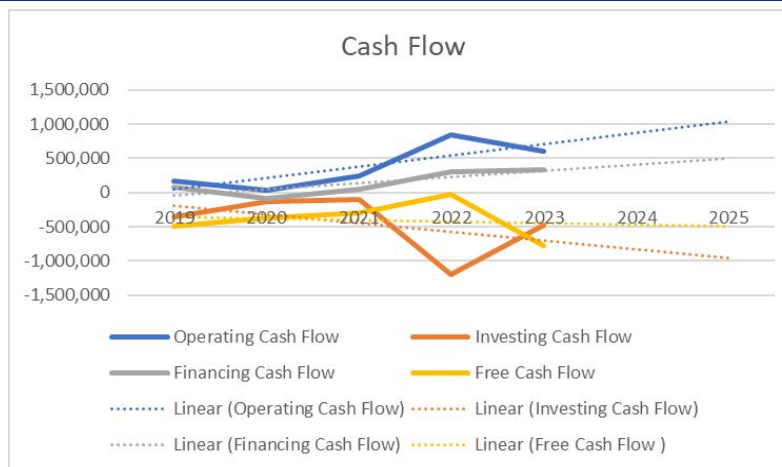
## Operating Expenses as % of Total Revenue (in millions)

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Revenue</b>	<b>3,391</b>	<b>4,113</b>	<b>2,905</b>	<b>2,941</b>	<b>2,244</b>	<b>3,063</b>	<b>2,711</b>	<b>2,923</b>	<b>2,619</b>	<b>3,319</b>
COGS	2,566	2,980	2,266	2,392	1,852	2,514	2,031	2,193	2,549	2,018
<i>COGS (% of Revenue)</i>	<i>75.7%</i>	<i>72.5%</i>	<i>78.0%</i>	<i>81.3%</i>	<i>82.5%</i>	<i>82.1%</i>	<i>74.9%</i>	<i>75.0%</i>	<i>97.3%</i>	<i>60.8%</i>
<b>Gross Profit</b>	<b>825</b>	<b>1,133</b>	<b>639</b>	<b>549</b>	<b>392</b>	<b>549</b>	<b>680</b>	<b>730</b>	<b>70</b>	<b>1,301</b>
R&D	144	131	125	89	84	97	94	99	113	152
<i>R&amp;D (% of Revenue)</i>	<i>7.1%</i>	<i>6.5%</i>	<i>6.2%</i>	<i>4.4%</i>	<i>4.2%</i>	<i>4.8%</i>	<i>4.7%</i>	<i>4.9%</i>	<i>5.6%</i>	<i>7.5%</i>
SG&A	254	255	262	203	177	205	223	170	165	198
<i>SG&amp;A (% of Revenue)</i>	<i>7.5%</i>	<i>6.2%</i>	<i>9.0%</i>	<i>6.9%</i>	<i>7.9%</i>	<i>6.7%</i>	<i>8.2%</i>	<i>5.8%</i>	<i>6.3%</i>	<i>6.0%</i>
Other Operating Income (Expenses)	(5)	(17)	(1)	(43)	(91)	(409)	(47)	126	180	(93)
Operating Expenses	403	403	388	335	352	711	364	143	98	443
<i>Operating Expenses (% of Revenue)</i>	<i>11.9%</i>	<i>9.8%</i>	<i>13.4%</i>	<i>11.4%</i>	<i>15.7%</i>	<i>23.2%</i>	<i>13.4%</i>	<i>4.9%</i>	<i>3.7%</i>	<i>13.3%</i>
<b>Operating Income</b>	<b>422</b>	<b>730</b>	<b>251</b>	<b>214</b>	<b>40</b>	<b>(162)</b>	<b>316</b>	<b>587</b>	<b>(28)</b>	<b>858</b>
<i>Operating Income (% of Revenue)</i>	<i>12.4%</i>	<i>17.7%</i>	<i>8.6%</i>	<i>7.3%</i>	<i>1.8%</i>	<i>(5.3)%</i>	<i>11.7%</i>	<i>20.1%</i>	<i>(1.1)%</i>	<i>25.9%</i>
Other Expenses (Income)	26	137	667	380	(104)	(47)	(82)	118	16	27
<b>Net Income</b>	<b>396</b>	<b>593</b>	<b>(416)</b>	<b>(166)</b>	<b>144</b>	<b>(115)</b>	<b>398</b>	<b>469</b>	<b>(44)</b>	<b>831</b>
<i>Net Income (% of Revenue)</i>	<i>11.7%</i>	<i>14.4%</i>	<i>(14.3)%</i>	<i>(5.6)%</i>	<i>6.4%</i>	<i>(3.8)%</i>	<i>14.7%</i>	<i>16.0%</i>	<i>(1.7)%</i>	<i>25.0%</i>

# Uses of Cash and Liquidity Forecast

Large cash and revolver reserves ensure adequate Capex and debt service coverage

## Uses of Cash & Solvency Expectations



## Liquidity

	Maturity	Facility Amount	Amount Outstanding	Amount Available
<b>Cash &amp; Cash Equivalent</b>				1,965
<b>Revolving Credit Facility/Bilateral Facilities</b>				
Senior Sec. Revolving Credit Facility	June '28	1,000		250
India Credit/Working Capital Facility	August '29	560.87	188.8	116.3
<b>Total Liquidity including Cash</b>				2331.2



# Debt Structure

## Debt instruments - current

	Description	Balance Sheet Amt Out (USD)	Coupon Rate	Coupon Type	Maturity Date	Seniority
<b>ST Debt</b>	Current Portion Of LTD	96.24	-	-	-	Other
<b>Revolving Credit</b>						
	Senior Sec. Revolving Credit Facility	-	7.20%	V	28-Jun	SNR Sec
<b>Bilateral Credit</b>						
	India Credit Facility	500	5.72%	V	29-Aug	SNR Sec
	India Working Capital Facility(INR)	60.28	8.87%	V	29-Aug	SNR Sec

**Interest Expense: 12.965**

**Interest as a % of Net Profits: 1.6%**

# Valuation

First Solar has strong long-term free cash flow potential

Discounted Cash Flow Analysis							
Discounted Cash Flow Analysis	2024P	2025P	2026P	2027P	2028P	2029P	2030P
Unlevered Free Cash Flow	(16)	(229)	785	2,079	2,687	3,158	3,463
Terminal Value @ 3% TGR							39,692
Present Value of Free Cash Flows	(14)	(183)	559	1,322	1,525	1,601	19,529
<b>Enterprise Value</b>	<b>24,349</b>	<b>WACC</b>		<b>Expected Return</b>	<b>Amount</b>	<b>Weight</b>	Assumed steady 3.0% TGR starting in 2031. All other ratios remain constant from 2030 levels.
- Net Debt	(1,542)	Debt	5.39%	560	2.91%		
<b>Equity Value</b>	<b>25,891</b>	Equity	12.18%	18,690	97.09%		
Shares Outstanding	106	Total	11.99%	16,970	100.00%		
<b>Implied Share Price</b>	<b>\$244.26</b>						
Current Share Price (9/29/2023)	\$174.60						
<b>% Upside</b>	<b>39.90%</b>						

## Comparable Companies Analysis

Financial Comps										
Ticker	Company	Share Price	Mkt Cap (M)	P/E	P/S	P/CF	P/B	ROA	ROE	ROIC
FSRL	First Solar	\$174.60	\$18,690	22.2	5.4	30.5	2.7	8.9%	13.3%	14.3%
JKS	JinkoSolar	\$23.27	\$1,210	2.8	0.1		0.5	5.1%	18.9%	15.3%
CSIQ	Canadian Solar	\$17.15	\$1,110	4.9	0.2	1.8	0.5	3.3%	12.2%	11.2%
688599	Trina Solar	\$3.37	\$7,340	8.5	0.5	3.4	1.7	6.5%	22.8%	26.3%
NEE	NextEra Energy	\$64.18	\$131,860	17.7	4.7	11.6	2.8	3.7%	16.9%	6.2%
Average				11.2	2.2	11.8	1.6	5.5%	16.8%	14.7%
Median				8.5	0.5	7.5	1.7	5.1%	16.9%	14.3%

Ticker	Company Name	Revenue	Rev. Growth	GI Margin	EBITDA Margin	EBIT Margin	Profit Margin	EPS Growth
FSLR	First Solar	\$3,319	26.7%	37.5%	34.0%	24.1%	23.1%	1,953.1%
JKS	JinkoSolar	\$119	42.7%	16.2%	5.7%	5.7%	3.0%	485.2%
CSIQ	Canadian Solar	\$7,613	1.9%	16.6%	9.8%	5.6%	3.3%	10.2%
688599	Trina Solar	\$15,116	51.2%	15.7%	6.0%	6.0%	6.1%	97.9%
NEE	NextEra Energy	\$28,115	34.2%		57.2%	35.4%	5.9%	72.5%
Average		\$10,856	31.4%	21.4%	22.5%	15.4%	8.3%	523.9%
Median		\$7,613	34.2%	16.4%	9.8%	6.0%	5.9%	97.9%

# Sensitivity Analysis

Price sensitivity with changes in WACC and TGR

## Sensitivity Table

		WACC				
244.26		11.0%	11.5%	12.0%	12.5%	13.0%
TRG	2.0%	256.51	240.31	225.80	212.73	200.92
	2.5%	267.97	250.29	234.54	220.44	207.73
	3.0%	280.87	261.45	244.26	228.95	215.23
	3.5%	295.49	274.00	255.12	238.41	223.52
	4.0%	312.20	288.23	267.34	248.98	232.73

	2021	2022	2023	Projected Years							
				1	2	3	4	5	6	7	8
DCF	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
<b>Revenue</b>	2,923	2,619	3,319	4,513	5,625	6,688	7,617	8,371	8,949	9,387	9,669
% Growth	7.82%	(10.40%)	26.73%	35.97%	24.64%	18.90%	13.90%	9.90%	6.90%	4.90%	3.00%
<b>EBIT</b>	587	-27	857	1,581	2,535	3,573	4,374	5,058	5,586	5,954	6,132
% of Revenue	20.07%	-1.04%	25.83%	35.03%	45.07%	53.42%	57.42%	60.42%	62.42%	63.42%	63.42%
<b>D&amp;A</b>	260	270	321	296	467	485	522	549	569	587	605
% of Revenue	8.89%	10.30%	9.66%	6.56%	8.30%	7.26%	6.86%	6.56%	6.36%	6.26%	6.26%
<b>CapEx</b>	540	904	1,387	1,788	1,074	1,018	1,007	981	959	959	988
% of Revenue	18.48%	34.50%	41.79%	39.62%	19.09%	15.22%	13.22%	11.72%	10.72%	10.22%	10.22%
<b>Change in NWC</b>		289	576	(487)	1,223	1,285	766	842	900	944	972
% of Revenue		11.03%	17.35%	-10.79%	21.74%	19.21%	10.05%	10.05%	10.05%	10.05%	10.05%

## QR Code

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# Risks

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1

## Geographical Concentration

Although First Solar has an international presence in India and Europe, 96% of their 2023 sales came from the U.S. market. An economic downturn in the macroeconomic scenario could greatly impact investments in the renewable sector, disrupting infrastructure and supply chain capabilities. Moreover, changes in the regulatory environment could pressure operational margins by reversing cost-cutting initiatives.

2

## Competition

First Solar's current strategy involves differentiating itself from competitors with R&D capabilities, advanced technology, and manufacturing processes. Thus, pressures on pricing by competitors may cause margins to squeeze. Moreover, disruptive innovations in the manufacturing process and cell efficiency by competitors would put pressure on First Solar's sales and margins.

3

## Supply-Demand Imbalance

Global expansion in manufacturing capabilities, particularly in China, may create a surge in supply relative to demand in the short term. Though in the medium to long term, demand is expected to "catch up" with manufacturing production, there could exist periods of imbalances between supply and demand.

4

## R&D and Supply Chain

In the evolving space of solar panel innovation, the company can lose its current competitive advantage if investments in research and development do not generate any significant impacts on their product or operations. Moreover, some of the raw materials required for module production come from a single supplier or a limited number of them, which could create supply chain hurdles.