

3856

Abalance

Shared Research Inc. has produced this report by request from the company discussed in the report. The aim is to provide an “owner’s manual” to investors. We at Shared Research Inc. make every effort to provide an accurate, objective, and neutral analysis. In order to highlight any biases, we clearly attribute our data and findings. We will always present opinions from company management as such. Our views are ours where stated. We do not try to convince or influence, only inform. We appreciate your suggestions and feedback. Write to us at sr_inquiries@sharedresearch.jp.



INDEX

Executive summary	3
Key financial data	5
.....	5
Recent updates	6
Trends and outlook	10
Quarterly trends and results	10
Full-year company forecast	14
Medium-term management plan	16
Business	17
Business overview	17
Business overview by reportable segment	18
Earnings structure	21
Market and value chain	26
Competition	30
Strengths and weaknesses	32
Strengths	32
Weaknesses	33
Financial statements	35
Income statement	35
Balance sheet	35
Cash flow statement	36
News and topics	37
Other information	41
Company profile	44

Executive summary

Abalance Corporation (TSE Standard: 3856) primarily manufactures and sells solar panels. It engages in the planning, development, sale, operation, and maintenance of solar power systems, as well as in the sale of electricity generated by proprietary solar power plants. As a holding company, Abalance oversees and controls group management, while subsidiaries handle business operations. In FY06/24, consolidated revenue was JPY209.0bn, and operating profit was JPY23.3bn. Businesses are managed under four reportable segments and Other businesses. The mainstay segments are the Solar Panel Manufacturing business (95.6% of consolidated revenue and 97.7% of operating profit before adjustments and inclusion of Other businesses) and the Green Energy business (4.0% and 2.2%).

The company was established in April 2000 as a developer and administrator of knowledge management software. In November 2011, it converted WWB Corporation (unlisted; planned, sold, and installed solar power systems) into a wholly owned subsidiary through an exchange of shares. In December 2020, Vietnam Sunergy Joint Stock Company (VSUN; unlisted), a Vietnamese solar panel manufacturer generating revenue over three times higher than Abalance at the time (FY06/21), was made into a consolidated subsidiary (the company held approximately 86.9% of voting rights at end-June 2024).

Solar Panel Manufacturing business is operated by VSUN and TOYO Co., Ltd., a business holding company established in October 2023 and headquartered in the Cayman Islands. VSUN was founded in June 2015 and is headquartered in Bac Giang Province, Northeast Vietnam. It operates four panel manufacturing plants in Vietnam with a total annual production capacity of 4GW. Additionally, a cell manufacturing plant with an annual capacity of 4GW was completed in late October 2023, and an ingot and wafer plant of the same capacity began operations in April 2024. TOYO currently operates the aforementioned cell manufacturing plant through its subsidiary, TOYO SOLAR Company Limited (formerly Vietnam Sunergy Cell Company Limited).

Both companies source raw materials from Europe, the US, and Asia and carry out integrated manufacturing at their plants in Vietnam, covering the entire process from ingot and wafer production to cell and panel manufacturing. Their products are supplied mainly to the US, Europe, and Asia through overseas branches and direct sales channels. Through continuous expansion of its manufacturing capacity, VSUN has grown into one of Vietnam's leading panel manufacturers. Additionally, TOYO was listed on the NASDAQ stock exchange (NASDAQ: TOYO) in July 2024. TOYO also plans to complete construction of a cell manufacturing plant in Ethiopia and a panel manufacturing plant in Texas, US, by March 2025.

Green Energy business: Mainly operated by subsidiaries WWB and Valors Corporation, the Green Energy segment comprises a recurring revenue business (accounting for 53% of segment revenue in FY06/24) and a one-time revenue business (47%). The recurring revenue business is based on a model through which the company continues to own the solar power plants it either develops or acquires, earning income from selling the generated electricity to power utilities. In the one-time revenue business, the company engages in solar power plant trades with renewable energy consumers, sells products associated with power generation facilities, and engages in direct sales or uses agents to provide end-to-end services for solar projects (such as planning, engineering, development/construction, operation and maintenance, and recycling) to companies and consumers. Abalance plans to expand the portfolio of solar power plants under its ownership and further raise the revenue mix of its recurring revenue business to secure stable earnings.

The company's current portfolio includes over 110 solar power plants located in Japan and overseas, and the total output capacity of these facilities is over 140MW. Abalance seeks to achieve 1GW in total output capacity by 2030.

In September 2023, the company formulated a new medium-term management plan for FY06/24–FY06/26. However, in August 2024, the company withdrew the numerical targets of this plan due to significant changes in the market conditions that were initially assumed. Specifically, a global supply glut in the core overseas solar panel manufacturing business has led to a market downturn, while the US market has been impacted by the expiration of tariff exemptions for solar panel-related products from four Southeast Asian countries in June 2024. Despite these challenges, the company remains committed to building a competitive supply chain in the Solar Panel Manufacturing business, including the construction of a cell plant in Ethiopia and a panel plant in the US, and diversifying its sales areas, with a focus on expanding sales in Europe and India. By swiftly adapting to market conditions and policy changes in the global solar panel market, which is still expected to grow, the company aims to drive sustainable business growth.

The International Energy Agency (IEA) predicts that global electricity demand will expand, with renewables such as solar and wind power becoming mainstream sources. IEA presents an outlook on installed capacity for each energy source based on three scenarios. In the most conservative scenario, it expects installed electricity capacity of solar power to grow from 1,610GW in 2023 to 5,838GW in 2030, and to 16,445GW in 2050. This will lead to expanded demand for solar

panels. However, in light of factors such as US–China trade frictions, there is a growing push to reevaluate supply chains. Shared Research understands that it is crucial for manufacturers to establish competitive supply systems for solar panels and components, such as solar cells, in strategically advantageous locations, including Southeast Asia, the US, and Africa.

Earnings trends

In FY06/24, consolidated revenue was JPY209.0bn (-2.9% YoY), operating profit was JPY23.3bn (+82.4% YoY), recurring profit was JPY24.9bn (+77.3% YoY), and net income attributable to owners of the parent was JPY9.5bn (+91.9% YoY). OPM improved to 11.2% (from 5.9% in FY06/23). Revenue declined due to a drop in sales prices in the core Solar Panel Manufacturing business, affected by the global softening of supply and demand, as well as the expiration of import tariff exemptions on solar panel-related products in the US in June 2024, a key market. However, operating profit increased due to improved cost efficiency driven by the full-year operation of the fourth solar panel plant, which began operations in October 2022, and the cost benefits from the in-house production of cells by TOYO SOLAR.

The company changed its fiscal year-end from June to March and announced its earnings forecast for FY03/25, covering the nine-month period from July 1, 2024, to March 31, 2025. The FY03/25 forecast includes revenue of JPY60.0bn, operating profit of JPY5.1bn, recurring profit of JPY5.1bn, and net income attributable to owners of the parent of JPY1.0bn. The global solar-related product market remains sluggish due to an easing of supply-demand pressures, and business conditions continue to be challenging. In response, the company plans to increase sales by expanding solar panel and cell supply to customers in India and the US. Additionally, it aims to offset new plant construction costs in Ethiopia and the US while maintaining profitability.

The company has set a goal to become a “core global company in renewable energy” by 2030, focusing on building a robust supply chain for solar panel manufacturing and leveraging the Green Energy business as growth engines to achieve sustainable growth and maximize corporate value. In September 2023, the company formulated a new medium-term management plan (FY06/24–FY06/26). However, in August 2024, the company withdrew the numerical targets of this plan due to significant changes in the market environment. The company intends to disclose new targets once they can be reasonably calculated.

Strengths and weaknesses

Abalance’s strengths, according to Shared Research (See the “Strengths and weaknesses” section for details)

- Achieves differentiation by expanding solar panel manufacturing capacity in Vietnam
- With the addition of manufacturing functions for ingots, wafers, and cells, key upstream processes in solar panel production, the company has formed a global supply chain and established the Japan brand, providing end-to-end services in Japan that no other peers can match
- VSUN is well recognized by third-party organizations and major purchasers for both its sustainable procurement practices and its solar panel quality, comparable with major manufacturers

Weaknesses

- Solar panels and cells, the group’s main products, are susceptible to demand/supply and price fluctuations due to policy changes by various governments. In response, VSUN is focusing on producing panels and internalizing component manufacturing in Vietnam while TOYO plans to produce panels and cells in the US to reduce policy-related risks.
- The company’s solar panel and cell production scale is still small compared to major manufacturers. Moving forward, in addition to expanding panel and cell manufacturing capacity, the company is strengthening its global supply chain, including the commencement of operations at the ingot and wafer plant (annual production capacity of 4GW) in April 2024.
- The company needs to strengthen its financial soundness to sustain high investment levels. Its equity ratio improved from 15.8% in FY06/24 to 17.0% at end-Q2 FY03/25, and it aims to continue enhancing this ratio through the accumulation of retained earnings.

Key financial data

	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24	FY03/25 (nine months) Company forecast
Income statement(JPYmn)											
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	
Revenue	4,396	4,540	6,495	7,301	5,985	6,678	26,901	92,122	215,284	208,972	60,000
YoY	31.4%	3.3%	43.1%	12.4%	-18.0%	11.6%	302.8%	242.4%	133.7%	-2.9%	-
Gross profit	1,081	1,108	1,489	2,178	1,873	1,762	4,788	9,613	29,621	44,573	
YoY	46.5%	2.5%	34.4%	46.3%	-14.0%	-5.9%	171.7%	100.8%	208.1%	50.5%	
Gross profit margin	24.6%	24.4%	22.9%	29.8%	31.3%	26.4%	17.8%	10.4%	13.8%	21.3%	
Operating profit	420	397	115	927	608	362	1,361	1,605	12,804	23,349	5,100
YoY	59.5%	-5.5%	-71.0%	704.7%	-34.4%	-40.5%	276.4%	17.9%	697.8%	82.4%	-
Operating profit margin	9.6%	8.8%	1.8%	12.7%	10.2%	5.4%	5.1%	1.7%	5.9%	11.2%	8.5%
EBITDA	468	431	169	1,050	882	627	2,081	3,209	15,096	28,165	
YoY	58.3%	-7.9%	-60.8%	521.0%	-16.0%	-29.0%	232.1%	54.2%	370.4%	86.6%	
EBITDA margin	10.6%	9.5%	2.6%	14.4%	14.7%	9.4%	7.7%	3.5%	7.0%	13.5%	
Recurring profit	339	427	49	874	566	306	1,269	1,418	14,038	24,894	5,100
YoY	40.9%	25.8%	-88.6%	1700.1%	-35.2%	-46.0%	315.3%	11.7%	890.0%	77.3%	-
Recurring profit margin	7.7%	9.4%	0.7%	12.0%	9.5%	4.6%	4.7%	1.5%	6.5%	11.9%	8.5%
Net income attributable to owners of the parent	200	231	-176	757	316	211	537	806	4,965	9,530	1,000
YoY	-14.6%	15.8%	-	-	-58.2%	-33.1%	154.2%	50.1%	516.0%	91.9%	-
Net margin	4.55%	5.10%	-2.7%	10.4%	5.3%	3.2%	2.0%	0.9%	2.3%	4.6%	1.7%
Per-share data(JPY, stock split, adjusted for reverse stock split)											
Shares issued(year-end, '000)	5,041	5,041	5,190	5,190	5,190	5,196	5,334	5,567	17,465	17,928	
EPS	13.22	15.31	-	48.64	20.38	13.64	34.21	49.12	293.36	547.83	56.20
EPS(fully diluted)	13.21	-	-	48.48	20.38	-	33.70	49.04	290.41	543.99	
Dividend per share	3.33	3.67	3.67	5.67	5.67	5.67	5.67	6.00	8.00	8.00	
Book value per share	68.68	80.65	68.42	113.54	127.15	134.99	251.62	353.33	726.88	1,337.80	
Balance sheet(JPYmn)											
Total current assets	2,093	2,420	4,692	5,227	6,078	8,553	22,537	57,450	100,049	89,197	
Cash and deposits	407	496	672	601	799	1,209	4,722	3,966	20,619	37,740	
Notes and accounts receivable	525	473	335	335	393	303	1,312	6,156	2,011	3,558	
Merchandise and finished goods	263	385	423	327	172	246	6,480	26,740	48,827	13,232	
Tangible fixed assets	189	223	1,222	1,456	4,239	5,529	15,201	20,507	32,943	49,304	
Intangible assets	61	5	290	217	195	110	365	4,688	7,523	6,404	
Investments and other assets	188	142	195	289	459	554	1,268	2,463	3,134	5,266	
Total assets	2,531	2,790	6,400	7,189	10,985	14,765	39,388	85,121	143,691	150,173	
Total current liabilities	1,127	1,368	3,545	3,873	4,641	6,745	26,212	57,721	100,356	83,261	
Total fixed liabilities	361	203	1,733	1,499	4,312	5,859	8,398	19,452	20,563	24,479	
Total liabilities	1,488	1,571	5,279	5,373	8,953	12,605	34,611	77,174	120,920	107,741	
Total net assets	1,043	1,219	1,121	1,816	2,032	2,159	4,777	7,947	22,771	42,432	
Shareholders' equity(excl. stock acquisition rights and non-controlling interests)	1,038	1,219	1,077	1,767	1,969	2,093	4,006	5,873	12,596	23,800	
Cash flow statement(JPYmn)											
Cash flows from operating activities	57	206	-984	405	-147	-861	-608	-6,449	18,526	44,757	
Cash flows from investing activities	-252	-75	-864	-659	-1,620	-472	-1,391	-13,221	-20,670	-21,191	
Cash flows from financing activities	104	-85	1,991	-62	1,913	1,465	5,290	17,752	17,235	-5,446	
Financial ratios											
ROA (RP-based)	14.7%	16.0%	1.1%	12.9%	6.2%	2.4%	4.7%	2.3%	12.3%	16.9%	
Return on equity(ROE)	21.0%	20.5%	-15.3%	53.2%	16.9%	10.4%	17.6%	16.3%	53.8%	52.4%	
Equity ratio	41.0%	43.7%	16.8%	24.6%	17.9%	14.2%	10.2%	6.9%	8.8%	15.8%	

Source: Shared Research based on company data

Notes: The company conducted a 100-for-1 stock split in FY06/14, and a 3-for-1 stock split in September 2022. Other changes in the number of shares outstanding are due to capital increases via third-party allotment and/or the exercise of share subscription rights.

EBITDA is obtained by adding depreciation and goodwill amortization to operating profit.

FY03/25 is a nine-month fiscal period due to the fiscal year-end change.

Any differences between figures in the table and those in company data are due to rounding.

Recent updates

Revisions to full-year earnings forecast due to fiscal year-end change, cancellation of interim dividend, and absorption-type merger of consolidated subsidiary

2025-02-14

Abalance Corporation announced revisions to its full-year earnings forecast due to a change in its fiscal year-end, the cancellation of its interim dividend, and the absorption-type merger of a consolidated subsidiary.

Full-year earnings forecast due to fiscal year-end change

The company revised its full-year earnings forecast for FY06/25, as its accounting period will be shortened to nine months following a fiscal year-end change, subject to the approval of "Partial Amendments to the Articles of Incorporation" at the extraordinary general meeting of shareholders scheduled for February 21, 2025.

Revised earnings forecast (nine-month period from July 1, 2024 to March 31, 2025; previous forecast based on a 12-month period)

- Revenue: JPY60.0bn (previous forecast: JPY80.0bn)
- Operating profit: JPY5.1bn (previous forecast: JPY10.0bn)
- Recurring profit: JPY5.1bn (previous forecast: JPY10.0bn)
- Net income attributable to owners of the parent: JPY1.0bn (previous forecast: JPY6.0bn)

Reasons for revision

The company plans to change its fiscal year-end from June 30 to March 31, subject to the approval of "Partial Amendments to the Articles of Incorporation" at the extraordinary general meeting of shareholders scheduled for February 21, 2025. As a result, the current fiscal year will be an irregular nine-month period from July 1, 2024 to March 31, 2025, serving as a transition period for the fiscal year-end change. Accordingly, the company revised its earnings forecast previously disclosed on August 14, 2024.

Cancellation of interim dividend payment

Dividends

- Interim dividend per share: JPY0 (previous forecast: undecided; previous fiscal year actual: JPY3)

The year-end dividend remains undecided.

Reasons

The company's core policy is to maintain stable dividends and proactive shareholder returns while securing internal reserves necessary for future business expansion and financial strength. Amid a growing global renewable energy market, the company group is focused on enhancing corporate value, with its solar panel business as the key growth driver. However, profit declined YoY, affected by weaker market conditions due to an easing of global supply-demand pressures in solar-related products, as well as uncertainty over the US tariff policies in its key market and strategic investments for global expansion.

After carefully reviewing the business environment surrounding the group, the company has decided not to pay an interim dividend for this fiscal year. Regarding the year-end dividend, the company will make a decision based on its stable dividend policy while closely monitoring future earnings trends.

Absorption-type merger with consolidated subsidiary

Purpose of merger

The company's consolidated subsidiary, Abit Corporation, operates an IT business, providing software license sales, system development, and related services. To streamline the group's organizational structure and optimize the allocation of management resources, the company has decided to merge Abit into itself through an absorption-type merger.

Overview

- Effective date of the merger: March 31, 2025 (planned)
- Merger method: Absorption-type merger, with the company as the surviving entity and Abit to be dissolved

Outlook

As the merger is with a wholly owned subsidiary, its impact on the company's financial performance will be minimal.

Change of fiscal year-end (end of business year) and partial amendments to the Articles of Incorporation, determination of the amount and details of stock option compensation for directors, and the convening of an Extraordinary General Meeting of Shareholders

2025-01-10

Abalance Corporation announced a change to its fiscal year-end (end of the business year) and partial amendments to its Articles of Incorporation, a decision regarding the amount and details of stock option compensation for directors, and the convening of an Extraordinary General Meeting of Shareholders (including agenda items, etc.).

Change of fiscal year-end (end of business year) and amendments to Articles of Incorporation

Abalance has decided to change its fiscal year-end (end of business year), subject to approval of the corresponding agenda item regarding amendments to the company's current Articles of Incorporation at the Extraordinary General Meeting of Shareholders scheduled for February 21, 2025.

Reasons for the change of fiscal year-end

Currently, the company's fiscal year runs from July 1 to June 30 of the following year. However, as the majority of its operating revenue is generated by overseas subsidiaries and the company plans to continue expanding its international business operations, it has decided to change its fiscal year to April 1 through March 31 of the following year. This change is intended to align the company's fiscal year with those of its overseas subsidiaries, enabling smoother global business operations and further enhancing the timeliness and transparency of management information.

Change of fiscal year-end

- Current: June 30
- After change: March 31

To facilitate the transition toward this new fiscal year-end, the company's 26th fiscal period will span only nine months (from July 1, 2024 through March 31, 2025).

Outlook

The company plans to announce its consolidated earnings forecast for its 26th fiscal year (July 1, 2024, through March 31, 2025), which will serve as the transition period for its change of fiscal year-end, once details have been finalized.

Partial amendments to Articles of Incorporation

The company will make the necessary amendments to its Articles of Incorporation to reflect this change in fiscal year-end (end of business year).

Amount and details of stock option compensation for directors

The company has decided to propose an amount and details for director stock option compensation as an agenda item during its Extraordinary General Meeting of Shareholders scheduled for February 21, 2025.

Reasons for submission and justification for the appropriateness of the compensation

The company has decided to submit an amount and specific details for stock option (share subscription rights) compensation for directors, including those serving as audit and supervisory committee members, as an agenda item during its Extraordinary General Meeting of Shareholders. These stock options aim to enhance director motivation and morale to improve the company's performance and corporate value, while further aligning the interests of directors with those of shareholders through the sharing of value. The company has determined these amounts and specific details for stock options are appropriate through a comprehensive evaluation of factors, including director contribution and execution of duties.

The amount of compensation for directors regarding stock options (share subscription rights)

The current compensation for the company's directors is capped at JPY100mn annually for directors not serving as audit and supervisory committee members (excluding employee salaries) and JPY30mn annually for directors serving concurrently as audit and supervisory committee members. The company plans to submit a proposal to establish a separate framework for stock option (share subscription rights) compensation, setting an annual cap of JPY100mn, of which up to JPY10mn will be allocated to directors serving concurrently as audit and supervisory committee members. The current board consists of six directors, including three who serve concurrently as audit and supervisory committee members.

Convening of Extraordinary General Meeting of Shareholders and determination of agenda items

The company has announced the date, time, and agenda items for the Extraordinary General Meeting of Shareholders (with December 31, 2024 as the record date for determining eligible shareholders) during which it will submit the two aforementioned proposals.

Date and time of the Extraordinary General Meeting of Shareholders

- February 21, 2025, at 1:00 p.m.

Agenda items for the Extraordinary General Meeting of Shareholders

- Proposal 1: Partial amendments to the Articles of Incorporation
- Proposal 2: Amounts and details of stock option compensation for directors

Lawsuit filed against Abalance Corporation and its seven subsidiaries

2024-12-19

Abalance Corporation announced that a lawsuit has been filed against the company and its seven subsidiaries.

Abalance announced that it, along with its seven subsidiaries, including Vietnam Sunergy Joint Stock Company ("VSUN") (collectively, the "company group"), has been sued by solar panel manufacturers SHANGHAI JINKO GREEN ENERGY ENTERPRISE MANAGEMENT CO., LTD. and ZHEJIANG JINKO SOLAR CO., LTD. (collectively, "JINKO") over alleged patent infringement. The company group has received a complaint from the United States District Court for the Northern District of California regarding the lawsuit.

Overview

According to JINKO's claims in the complaint, VSUN's solar panel products, including N-type TOPCON solar panels, allegedly incorporate JINKO's patented technology without authorization. Consequently, JINKO filed the lawsuit seeking compensation for past and future damages resulting from the alleged patent infringement. JINKO is demanding that the company group pay at least reasonable royalties and lost profits attributable to the unauthorized use of its patented technology. Additionally, JINKO is seeking an injunction to prohibit further patent infringement activities.

Details of the litigation and claim amount

- Litigation details: Claim for reasonable royalties, damages, and an injunction related to patent infringement
- Claim amount: Undetermined

Outlook

According to the company, the company group remains committed to respecting intellectual property rights and has already begun consulting with a US-based law firm specializing in patent law regarding the litigation. The company plans to thoroughly examine the plaintiff's claims and pursue its legal defense in the lawsuit. At this stage, the potential impact of the litigation on the company's consolidated financial results is uncertain. Should any material developments requiring disclosure arise, the company intends to announce them promptly.

Trends and outlook

Quarterly trends and results

Earnings (quarterly) (cumulative) (JPYmn)	FY06/24				FY03/25			FY03/25 (nine months)	
	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	Q1-Q3	% of forecast	FY forecast
Revenue	57,740	108,543	155,626	208,972	21,655	45,613		76.0%	60,000
YoY	3.9%	-2.7%	-4.3%	-2.9%	-62.5%	-58.0%			-
Cost of revenue	49,120	89,838	126,822	164,398	17,856	36,492			
YoY	-3.5%	-9.3%	-11.4%	-11.5%	-63.6%	-59.4%			
Cost of revenue ratio	85.1%	82.8%	81.5%	78.7%	82.5%	80.0%			
Gross profit	8,620	18,704	28,803	44,573	3,799	9,120			
YoY	85.3%	50.2%	47.1%	50.5%	-55.9%	-51.2%			
Gross profit margin	14.9%	17.2%	18.5%	21.3%	17.5%	20.0%			
SG&A expenses	3,935	8,647	14,762	21,224	2,465	5,959			
YoY	25.0%	14.6%	42.4%	26.2%	-37.4%	-31.1%			
SG&A ratio	6.8%	8.0%	9.5%	10.2%	11.4%	13.1%			
Operating profit	4,684	10,057	14,040	23,349	1,333	3,161		62.0%	5,100
YoY	211.0%	104.9%	52.4%	82.4%	-71.5%	-68.6%			-
Operating profit margin	8.1%	9.3%	9.0%	11.2%	6.2%	6.9%			8.5%
Recurring profit	4,518	10,507	14,482	24,894	375	3,289		64.5%	5,100
YoY	242.0%	87.6%	39.7%	77.3%	-91.7%	-68.7%			-
Recurring profit margin	7.8%	9.7%	9.3%	11.9%	1.7%	7.2%			8.5%
Net income attributable to owners of the parent	1,744	3,635	5,469	9,530	-578	348		34.8%	1,000
YoY	286.7%	69.2%	45.3%	91.9%	-	-90.4%			-
Net margin	3.0%	3.3%	3.5%	4.6%	-	0.8%			1.7%

Earnings (quarterly) (JPYmn)	FY06/24				FY03/25		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Revenue	57,740	50,803	47,083	53,346	21,655	23,958	
YoY	3.9%	-9.3%	-7.9%	1.4%	-62.5%	-52.8%	
Cost of revenue	49,120	40,718	36,984	37,576	17,856	18,636	
YoY	-3.5%	-15.5%	-16.0%	-11.7%	-63.6%	-54.2%	
Cost of revenue ratio	85.1%	80.1%	78.6%	70.4%	82.5%	77.8%	
Gross profit	8,620	10,084	10,099	15,770	3,799	5,321	
YoY	85.3%	29.2%	41.7%	57.1%	-55.9%	-47.2%	
Gross profit margin	14.9%	19.8%	21.4%	29.6%	17.5%	22.2%	
SG&A expenses	3,935	4,712	6,115	6,462	2,465	3,494	
YoY	25.0%	7.1%	116.8%	0.2%	-37.4%	-25.8%	
SG&A ratio	6.8%	9.3%	13.0%	12.1%	11.4%	14.6%	
Operating profit	4,684	5,373	3,983	9,309	1,333	1,828	
YoY	211.0%	57.9%	-7.5%	159.2%	-71.5%	-66.0%	
Operating profit margin	8.1%	10.6%	8.5%	17.5%	6.2%	7.6%	
Recurring profit	4,518	5,989	3,975	10,412	375	2,914	
YoY	242.0%	39.9%	-16.5%	183.4%	-91.7%	-51.3%	
Recurring profit margin	7.8%	11.8%	8.4%	19.5%	1.7%	12.2%	
Net income attributable to owners of the parent	1,744	1,891	1,834	4,061	-578	926	
YoY	286.7%	11.4%	13.5%	238.1%	-	-51.0%	
Net margin	3.0%	3.7%	3.9%	7.6%	-	3.9%	

Source: Shared Research based on company data

Notes: FY03/25 is a nine-month fiscal period due to the fiscal year-end change. As a result, YoY comparisons are not available, and progress rates are based on the nine-month forecast.

Any differences between figures in the table and those in company data are due to rounding.

Revenue by segment (cumulative)

By segment(cumulative) (JPYmm)	FY06/24				FY03/25		
	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	Q1-Q3
Revenue	57,740	108,543	155,626	208,972	21,655	45,613	
YoY	3.9%	-2.7%	-4.3%	-2.9%	-62.5%	-58.0%	
Solar Panel Manufacturing business	55,495	104,259	148,651	199,874	19,700	40,954	
YoY	4.2%	-3.0%	-4.8%	-3.4%	-64.5%	-60.7%	
% of revenue	96.1%	96.1%	95.5%	95.6%	91.0%	89.8%	
Green Energy business	2,066	3,947	6,372	8,341	1,796	4,191	
YoY	-2.8%	1.0%	2.3%	4.2%	-13.1%	6.2%	
% of revenue	3.6%	3.6%	4.1%	4.0%	8.3%	9.2%	
IT business	161	301	450	590	-	-	
YoY	4.5%	-8.2%	-7.2%	-12.9%	-	-	
% of revenue	0.3%	0.3%	0.3%	0.3%	-	-	
Photocatalyst business	9	19	27	41	-	-	
YoY	-10.0%	5.6%	-6.9%	2.5%	-	-	
% of revenue	0.0%	0.0%	0.0%	0.0%	-	-	
Reportable segments total	57,733	108,527	155,502	208,847	21,497	45,146	
YoY	3.9%	-2.8%	-4.6%	-3.1%	-	-58.4%	
% of revenue	100.0%	100.0%	99.9%	99.9%	99.3%	99.0%	
Other businesses and adjustments	6	15	124	125	158	467	
YoY	20.0%	-	-	-	-	3013.3%	
% of revenue	0.0%	0.0%	0.1%	0.1%	0.7%	1.0%	
Operating profit	4,684	10,057	14,040	23,349	1,333	3,161	
YoY	211.0%	104.9%	52.4%	82.4%	-71.5%	-68.6%	
Operating profit margin	8.1%	9.3%	9.0%	11.2%	6.2%	6.9%	
Solar Panel Manufacturing business	4,390	10,062	13,978	23,876	1,306	3,295	
YoY	273.6%	118.2%	56.6%	88.0%	-70.3%	-67.3%	
% of total	93.7%	100.0%	99.6%	102.3%	98.0%	104.2%	
Segment profit margin	7.9%	9.7%	9.4%	11.9%	6.6%	8.0%	
Green Energy business	494	636	885	532	277	291	
YoY	-4.6%	-5.5%	0.5%	-50.6%	-43.9%	-54.2%	
% of total	10.5%	6.3%	6.3%	2.3%	20.8%	9.2%	
Segment profit margin	23.9%	16.1%	13.9%	6.4%	15.4%	6.9%	
IT business	21	20	27	40	-	-	
YoY	-	81.8%	58.8%	-14.9%	-	-	
% of total	0.4%	0.2%	0.2%	0.2%	-	-	
Segment profit margin	13.0%	6.6%	6.0%	6.8%	-	-	
Photocatalyst business	-5	-10	0	2	-	-	
YoY	-	-	-	-	-	-	
% of total	-	-	-	0.0%	-	-	
Segment profit margin	-	-	-	4.9%	-	-	
Reportable segments total	4,901	10,708	14,890	24,450	1,583	3,586	
YoY	190.9%	103.0%	52.0%	77.4%	-	-66.5%	
% of total	104.6%	106.5%	106.1%	104.7%	118.8%	113.4%	
Segment profit margin	8.5%	9.9%	9.6%	11.7%	7.4%	7.9%	

Source: Shared Research based on company data

Notes: Any differences between figures in the table and those in company data are due to rounding.

From Q1 FY03/25, the reportable segments are reorganized from the four categories of Solar Panel Manufacturing, Green Energy, IT, and Photocatalyst businesses into two categories: Solar Panel Manufacturing and Green Energy businesses. The IT and Photocatalyst businesses are included under Other businesses.

Profit by segment (by quarter)

By segment (by quarter) (JPYmm)	FY06/24				FY03/25		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Revenue	57,740	50,803	47,083	53,346	21,655	23,988	
YoY	3.9%	-9.3%	-7.9%	1.4%	-62.5%	-52.8%	
Solar Panel Manufacturing business	55,495	48,764	44,392	51,223	19,700	21,254	
YoY	4.2%	-10.0%	-8.9%	1.2%	-64.5%	-56.4%	
% of revenue	96.1%	96.0%	94.3%	96.0%	91.0%	88.7%	
Green Energy business	2,066	1,881	2,425	1,969	1,796	2,395	
YoY	-2.8%	5.6%	4.5%	11.0%	-13.1%	27.3%	
% of revenue	3.6%	3.7%	5.2%	3.7%	8.3%	10.0%	
IT business	161	140	149	140	-	-	
YoY	4.5%	-19.5%	-5.1%	-27.1%	-	-	
% of revenue	0.3%	0.3%	0.3%	0.3%	-	-	
Photocatalyst business	9	10	8	14	-	-	
YoY	-10.0%	25.0%	-27.3%	27.3%	-	-	
% of revenue	0.0%	0.0%	0.0%	0.0%	-	-	
Reportable segments total	57,733	50,794	46,975	53,345	21,497	23,649	
YoY	3.9%	-9.5%	-8.3%	1.4%	-	-53.4%	
% of revenue	100.0%	100.0%	99.8%	100.0%	99.3%	98.7%	
Other businesses and adjustments	6	9	109	1	158	309	
YoY	20.0%	-	-	-	-	3333.3%	
% of revenue	0.0%	0.0%	0.2%	0.0%	0.7%	1.3%	
Operating profit	4,684	5,373	3,983	9,309	1,333	1,828	
YoY	211.0%	57.9%	-7.5%	159.2%	-71.5%	-66.0%	
Operating profit margin	8.1%	10.6%	8.5%	17.5%	6.2%	7.6%	
Solar Panel Manufacturing business	4,390	5,672	3,916	9,898	1,306	1,989	
YoY	273.6%	65.0%	-9.2%	162.3%	-70.3%	-64.9%	
% of total	93.7%	105.6%	98.3%	106.3%	98.0%	108.8%	
Segment profit margin	7.9%	11.6%	8.8%	19.3%	6.6%	9.4%	
Green Energy business	494	142	249	-353	277	14	
YoY	-4.6%	-8.4%	19.7%	-	-43.9%	-90.1%	
% of total	10.5%	2.6%	6.3%	-	20.8%	0.8%	
Segment profit margin	23.9%	7.5%	10.3%	-	15.4%	0.6%	
IT business	21	-1	7	13	-	-	
YoY	-	-	16.7%	-56.7%	-	-	
% of total	0.4%	-	0.2%	0.1%	-	-	
Segment profit margin	13.0%	-	4.7%	9.3%	-	-	
Photocatalyst business	-5	-5	10	2	-	-	
YoY	-	-	-	-	-	-	
% of total	-	-	0.3%	0.0%	-	-	
Segment profit margin	-	-	125.0%	14.3%	-	-	
Reportable segments total	4,901	5,807	4,182	9,560	1,583	2,003	
YoY	190.9%	61.8%	-7.5%	139.5%	-	-65.5%	
% of total	104.6%	108.1%	105.0%	102.7%	118.8%	109.6%	
Segment profit margin	8.5%	11.4%	8.9%	17.9%	7.4%	8.5%	

Source: Shared Research based on company data

Notes: Any differences between figures in the table and those in company data are due to rounding.

From Q1 FY03/25, the reportable segments are reorganized from the four categories of Solar Panel Manufacturing, Green Energy, IT, and Photocatalyst businesses into two categories: Solar Panel Manufacturing and Green Energy businesses. The IT and Photocatalyst businesses are included under Other businesses.

1H FY03/25 results

The company changed its fiscal year-end from June to March, following approval at the shareholders' meeting on February 21, 2025. As a result, FY2024 will be a nine-month fiscal period (from July 1, 2024, to March 31, 2025). In this report, the current fiscal year is referred to as FY03/25.

Revenue: JPY45.6bn (-58.0% YoY)

Operating profit: JPY3.2bn (-68.6% YoY)

OPM: 6.9% (9.3% in 1H FY06/24)

Recurring profit: JPY3.3bn (-68.7% YoY)

Net income attributable to owners of the parent: JPY348mn (-90.4% YoY)

In 1H FY03/25, the company reported revenue of JPY45.6bn (-58.0% YoY), operating profit of JPY3.2bn (-68.6% YoY), recurring profit of JPY3.3bn (-68.7% YoY), and net income attributable to owners of the parent of JPY348mn (-90.4% YoY). OPM was 6.9%, down from 9.3% in 1H FY06/24. In the company's core Solar Panel Manufacturing business, global demand remains strong, but market conditions have weakened due to an oversupply of solar-related products. The company expects market recovery to take time. In the US market, one of its key sales regions, the US government issued a preliminary decision imposing anti-dumping (AD) and countervailing duties (CVD) on VSUN. According to the company, a final decision is expected by mid-2025. To navigate these challenges, the company has pursued new sales strategies focused on India and OEM-based sales to US customers, which have already shown some improvements.

The company recorded a foreign exchange gain of JPY672mn due to the depreciation of the yen in 1H FY03/25. It also booked an extraordinary loss of JPY414mn, which included a JPY270mn loss from the retirement of fixed assets at its Vietnamese subsidiary in the Solar Panel Manufacturing business and a JPY135mn surcharge.

Results in key reportable segments

Solar Panel Manufacturing business

Revenue: JPY41.0bn (-60.7% YoY)

Segment profit: JPY3.3bn (-67.3% YoY)

Segment profit margin: 8.0% (9.7% in 1H FY06/24)

In 1H FY03/25, revenue totaled JPY41.0bn (-60.7% YoY), while segment profit declined to JPY3.3bn (-67.3% YoY). Revenue and profit fell YoY as orders from the US, the company's primary market, declined due to the expiration of import tariff exemptions on solar-related products and uncertainty over the potential imposition of AD and CVD.

Segment profit declined significantly due to lower factory utilization rates at VSUN and TOYO SOLAR, driven by a sharp reduction in shipment volumes. The company has previously worked to improve profit margins by internalizing value-added processes such as in-house production of cells and wafers. However, in 1H FY03/25, the impact of reduced volumes was substantial. Despite efforts to cut fixed costs, including workforce reductions, the profit margin fell 1.7pp from 9.7% in 1H FY06/24 to 8.0%. Additionally, in Q1 FY03/25, the company implemented one-time accelerated depreciation and other adjustments in cost of revenue to address the challenging business environment, further exacerbating the decline in the profit margin.

While the company remains focused on the US market, it has worked to stabilize its business by diversifying sales channels, expanding into Europe, India, and other Asian markets. The company is also working to reduce operating costs, as sluggish US sales have led to lower utilization rates at its Vietnam plant.

In Q2 FY03/25 (three months), revenue in the Solar Panel Manufacturing business improved QoQ. Revenue increased 7.9% QoQ, while OPM improved by 2.7pp to 9.4%. Shared Research attributes this to sales growth in Europe and India, as well as cost reductions from workforce reductions and lower depreciation expenses.

US tariff measures

The US market, a key sales region for the company, has been subject to multiple tariff measures on solar panel-related products. In 2018, under the Trump administration, the US imposed safeguard measures restricting solar power product imports. In 2022, the Biden administration extended these measures for another four years. However, due to strong domestic demand for solar panels, the US implemented a two-year tariff exemption starting in June 2022, allowing duty-free imports from four Southeast Asian countries (Cambodia, Malaysia, Thailand, and Vietnam). This exemption ended in June 2024 to support domestic industry development and prevent circumvention of tariffs on Chinese products. As a result, these four countries became subject to an investigation in May 2024 to determine whether AD and CVD should be imposed. In October 2024, the US issued a preliminary decision imposing CVD, followed by a preliminary AD decision in November 2024. The preliminary CVD rate for Vietnam was set at 2.85%, a relatively minor impact. However, AD rates vary by company, and VSUN was assigned a dumping margin of 54.46%. According to the US Department of Commerce, the final decision on these tariffs is expected in April 2025.

The company's strategy

While the renewable energy market is expected to see significant growth over the medium to long term, market conditions tend to fluctuate due to policy changes in various countries, as noted above. To address this, the company is taking measures in both sales and manufacturing. On the sales front, it is shifting its focus from a US-centered sales strategy to expanding panel and cell sales in Europe and India. On the manufacturing front, the company is constructing a new cell plant in Ethiopia and will relocate part of its cell production capacity (2GW) from Vietnam. Additionally, it plans to build a panel factory in the US to produce US-made solar panels. (For details on the new factories in Ethiopia and the US, see "Full-year company forecast.")

Green Energy business

Revenue: JPY4.2bn (+6.2% YoY)

Segment profit: JPY291mn (-54.2% YoY)

Segment profit margin: 6.9% (16.1% in 1H FY06/24)

In 1H FY03/25, the company recorded JPY2.0bn in revenue from the sale of solar power plants and related materials and JPY2.2bn from electricity sales and operation & maintenance (O&M) services, bringing total revenue to JPY4.2bn (+6.2% YoY). Segment profit declined 54.2% YoY to JPY291mn, primarily due to a temporary decline in revenue from its one-time

revenue business, following a strategic reallocation of its power plant portfolio under its business selection and concentration strategy. The company, primarily through WWB Corporation and Valors Corporation, engages in a one-time revenue business, selling solar power plants, solar panels, power conditioning systems (PCS), and industrial and residential storage batteries. At the same time, it is working to establish a stable revenue structure based on electricity sales by promoting a recurring revenue business, in which it retains ownership and management of power plants even after their completion.

In its one-time revenue business, the company has established a sales system through retail mass-market channels in Japan, contributing to revenue growth by increasing sales volume. In its recurring revenue business, the company is developing high-quality power generation projects by leveraging its in-house development capabilities and continues to advance power plant development and construction to strengthen its business foundation.

In addition to actively expanding overseas, the company is developing a solar panel reuse business through PV Repower Corp. to address growing concerns over solar panel disposal as a future social issue. Additionally, in Hokkaido, the company has entered the grid storage battery business to support stable power supply during outages and supply-demand balancing. This fiscal year, a subsidy was approved for a second project in the region.

Equity ratio

The equity ratio rose to 17.0%, up from 15.8% at end-FY06/24. The company conducted a third-party allotment of shares amounting to JPY863mn in May 2024. To ensure financial soundness, the company plans to strengthen its equity further by increasing retained earnings, focusing on the Solar Panel Manufacturing and Green Energy businesses.

Full-year company forecast

Full-year company forecast

(JPYmn)	FY06/23			FY06/24			FY03/25 (nine months)		
	1H results	2H results	FY results	1H results	2H results	FY results	1H results	2H forecast	FY forecast
Revenue	111,553	103,731	215,284	108,543	100,429	208,972	45,613	14,387	60,000
YoY	323.5%	57.7%	133.7%	-2.7%	-3.2%	-2.9%	-58.0%	-	-
Operating profit	4,908	7,896	12,804	10,057	13,292	23,349	3,161	1,939	5,100
YoY	-	574.3%	697.8%	104.9%	68.3%	82.4%	-68.6%	-	-
Operating profit margin	4.4%	7.6%	5.9%	9.3%	13.2%	11.2%	6.9%	13.5%	8.5%
Recurring profit	5,602	8,436	14,038	10,507	14,387	24,884	3,289	1,811	5,100
YoY	2224.5%	616.7%	890.0%	87.6%	70.5%	77.3%	-68.7%	-	-
Recurring profit margin	5.0%	8.1%	6.5%	9.7%	14.3%	11.9%	7.2%	12.6%	8.5%
Net income attributable to owners of the parent	2,148	2,817	4,965	3,635	5,895	9,530	348	652	1,000
YoY	190.7%	-	516.0%	69.2%	109.3%	91.9%	-90.4%	-	-
Net margin	1.9%	2.7%	2.3%	3.3%	5.9%	4.6%	0.8%	4.5%	1.7%

Source: Shared Research based on company data

Notes: FY03/25 will be a nine-month fiscal period due to the fiscal year-end change. As a result, YoY comparisons for 2H and full-year results are not available.

Any differences between figures in the table and those in company data are due to rounding.

FY03/25 (nine-month) company forecast

Revenue: JPY60.0bn (Previous forecast [12-month]: JPY80.0bn)

Operating profit: JPY5.1bn (Previous forecast: JPY10.0bn)

OPM: 8.5% (Previous forecast: 12.5%)

Recurring profit: JPY5.1bn (Previous forecast: JPY10.0bn)

Net income attributable to owners of the parent: JPY1.0bn (Previous forecast: JPY6.0bn)

In the Solar Panel Manufacturing business, the global solar-related product market remains sluggish due to an oversupply, and business conditions continue to be challenging. In the US market, the final decision on AD and CVD imposed by the US government on four Southeast Asian countries is expected by mid-2025. As a result, export conditions for the company's high-value-added products (N-type panels and cells) remain challenging. To navigate these market conditions, the company is expanding solar panel and cell supply to customers in India and the US, with 1H sales performing steadily. Additionally, it aims to offset the costs of new plant construction in Ethiopia and the US, a key strategic investment for its global expansion, while securing profitability.

The company has decided to forgo the interim dividend for 1H FY03/25, based on its financial results for the period (compared to JPY3 per share in 1H FY06/24). The year-end dividend forecast remains undecided. The company maintains a stable dividend policy as its fundamental approach to shareholder returns and will disclose its decision once finalized, considering business performance and financial conditions.

Solar Panel Manufacturing business

Solar panel supply and demand trends

As part of global efforts to combat climate change driven by global warming, the adoption of renewable energy is expected to accelerate worldwide, with the solar power market projected to grow over the medium to long term. However, since the beginning of 2024, the supply-demand balance for solar panels and raw materials has softened, leading to a downward trend in prices. This trend is expected to continue into FY03/25. According to PVeye Market Data, as of December 2024, the price of crystalline solar panel modules was USD0.10 per watt, representing a 28.6% decline compared to end-December 2023. Similarly, monocrystalline cells saw a 33.3% price drop over the same period.

The US situation

In November 2024, the US Department of Commerce's International Trade Administration (ITA) issued a preliminary decision to impose AD on solar cells manufactured in four Southeast Asian countries—Cambodia, Malaysia, Thailand, and Vietnam. Additionally, on October 1, it announced a preliminary decision to impose CVD, and collection of duties has already begun. While there is uncertainty regarding tariff policies under the second Trump administration, the Japan External Trade Organization (JETRO) suggests previously implemented tariffs are likely to remain in place. Shared Research speculates the US government's aggressive tariff stance is also supported by the increasing production capacity of domestic solar panel factories, driven by subsidies under the Inflation Reduction Act (IRA). Notably, South Korean solar company Hanwha Qcells has announced plans to build a 12GW solar panel (module) factory in the US over eight years, with part of the facility already in operation since April 2024.

The company's response

Considering the situation in the US, the company is implementing measures on both the sales and manufacturing fronts. On the sales front, it is shifting from a US-centric sales strategy to strengthening panel and cell sales in Europe and India. On the manufacturing front, the company is constructing a new cell factory in Ethiopia and relocating part of its cell production capacity in Vietnam (2GW) to this facility, which is scheduled for completion in March 2025. Additionally, it plans to establish a panel factory in the US to produce US-made solar panels, also set for completion in March 2025.

Ethiopia project

The company plans to commence solar cell production in the Federal Democratic Republic of Ethiopia in addition to operating its solar panel plant in the US. Due to the increasing practical difficulty of exporting panels and cells from Vietnam to the US due to tariffs, the company selected Ethiopia as the new candidate location for cell production. The company currently recognizes no risk of anti-dumping (AD) or countervailing duties (CVD) being imposed on exports from Ethiopia to the US. Additionally, factors such as infrastructure development, including electricity, and low labor costs contributed to the selection of this location. The total planned investment amount is approximately JPY9.0bn (primarily allocated to manufacturing equipment, with land and buildings secured via leasing). Construction is scheduled for completion in March 2025. The plant will have a production capacity of 2GW, with 2GW of capacity transferred from the company's Vietnam facility (reducing the Vietnam plant's capacity from 4GW to 2GW). At full production (assuming a certain utilization rate), the company estimates annual revenue of USD135mn. It intends to export produced cells primarily to the planned solar panel factory in the US.

- Location: Federal Democratic Republic of Ethiopia
- Production capacity: 2GW (cells)
- Investment amount: Approx. JPY9.0bn (for manufacturing equipment, etc.)
- Projected revenue: USD135mn annually
- Completion date: March 2025

Texas project

The company announced plans to establish a new solar panel factory in Texas, US. Consolidated subsidiary TOYO has already acquired and made TOYO SOLAR Texas LLC (Texas LLC) a subsidiary to expand its solar panel business in the US. Texas LLC is scheduled for completion in March 2025, with the company targeting 1GW of production capacity by mid-2025 in the initial phase of development (Phase 1). In Phase 2, the company plans to increase capacity by an additional 1.5GW by end-2025, bringing the total capacity to 2.5GW. It expects the investment amount to be approximately JPY4.5bn for Phase 1 and JPY9.0bn for Phase 2. The company plans to fund the project using a combination of internal resources and other financing methods.

Since Texas LLC is a solar panel factory, the company plans to primarily use cells produced at its Ethiopian facility. While uncertainty remains regarding US tariff policies under the second Trump administration, Shared Research speculates

exporting cells from Ethiopia and assembling them into panels in the US offers greater tax advantages compared to exporting cells or panels from Vietnam. The company is also exploring various approaches to adapt flexibly to regulatory changes across different countries.

- Location: Texas, US
- Production capacity: 2.5GW of panels (Phase 1: 1GW, Phase 2: 1.5GW)
- Investment amount: Approx. JPY13.5bn (including manufacturing equipment; Phase 1: JPY4.5bn, Phase 2: JPY9.0bn)
- Scheduled date of completion: March 2025 (Phase 2 to be completed by end-2025)

Green Energy business

The company is strengthening its recurring revenue business by retaining ownership of solar power plants and selling electricity to power companies. Alongside developing and constructing power plants, the company is actively pursuing M&A opportunities to expand its business foundation. For its one-time revenue business, which offers solar power-related services, the company has partnered with retail mass-market stores to sell solar power and storage equipment to their customers. Additionally, the company is expanding its operations overseas and proactively addressing the future challenge of solar panel disposal by continuously engaging in reuse and recycling initiatives. This approach reflects the company's commitment to solving social issues and contributing to sustainable development.

Medium-term management plan

Medium-term management plan

In September 2023, the company announced its medium-term management plan (2024–26), with FY06/26 as the final year. However, in August 2024, the company withdrew its numerical targets due to significant changes in its business environment. The company remains committed to growing its business in the global solar panel market, which is expected to continue expanding. To achieve this, it plans to respond swiftly to market and policy changes, build a competitive supply chain in its Solar Panel Manufacturing business, and diversify its sales areas. The company intends to disclose new numerical targets once they can be reasonably calculated.

Medium-term management plan numerical targets announced in September 2023 (withdrawn in August 2024)

Medium-term management plan (announced in September 2023 and withdrawn in August 2024)

(JPYmn)	FY06/23		FY06/24 (Company forecast)				FY06/25 (Company forecast)				FY06/26 (Company forecast)				CAGR
	Results	YoY	YoY change	% of total	YoY	YoY change	% of total	YoY	YoY change	% of total	YoY	YoY change	% of total		
Revenue	215,284	251,800	17.0%	36,516	100.0%	301,800	19.9%	50,000	100.0%	355,800	17.9%	54,000	100.0%	18.2%	
Solar Panel Manufacturing business	206,811	239,000	15.6%	32,189	94.9%	287,000	20.1%	48,000	95.1%	338,000	17.8%	51,000	95.0%	17.8%	
Domestic business(one-time revenue)	5,270	7,800	48.0%	2,530	3.1%	8,800	12.8%	1,000	2.9%	9,800	11.4%	1,000	2.8%	23.0%	
Domestic business(recurring revenue)	3,200	5,000	56.3%	1,800	2.0%	6,000	20.0%	1,000	2.0%	8,000	33.3%	2,000	2.2%	35.7%	
Operating profit	12,804	15,800	23.4%	2,996	6.3%	25,800	63.3%	10,000	8.5%	30,800	19.4%	5,000	8.7%	34.0%	
Recurring profit	14,038	15,800	12.6%	1,762	6.3%	25,800	63.3%	10,000	8.5%	30,800	19.4%	5,000	8.7%	29.9%	
Net income attributable to owners of the parent	4,965	7,000	41.0%	2,035	2.8%	-	-	-	-	-	-	-	-	-	
Equity ratio	8.8%									20.0%					

Source: Shared Research based on company data.

Notes: The domestic business (one-time revenue) includes revenue from power plant sales and goods (such as panels and batteries) by domestic group companies, as well as sales in the IT and Photocatalyst businesses. The domestic business (recurring revenue) includes revenue from electricity sales in the Green Energy business and stable revenue from operation and maintenance (O&M), and other revenue streams that form the source of cash flow.

The unit price of solar panels is at risk of falling below the planned value if there is a global decline in panel prices, which would cause a drop in sales prices.

The assumed exchange rate is JPY130–JPY135/USD.

The fourth solar panel plant is expected to gradually improve its utilization rate in line with the progress of in-house production of cells, which are key components.

As for the impact of additional tariff measures on solar power generation products (cells and panels) in the US, the company has not factored it in at this point in time as the company has not been designated as subject companies, and it is difficult to foresee sufficiently.

Business

Business overview

The Abalance group comprises the parent company Abalance, consolidated subsidiaries, and affiliates. As a holding company, Abalance oversees and controls group management, while subsidiaries handle business operations. Key consolidated subsidiaries as of end-June 2024 are as follows. In the Solar Panel Manufacturing business, the group includes Vietnam Sunergy Joint Stock Company (VSUN), which primarily produces solar panels, and TOYO (NASDAQ-listed), which owns Cell Company (now TOYO SOLAR Company Limited) as a subsidiary for solar cell production, along with TOYO's affiliates. In the Green Energy business, the group includes WWB Corporation, Valors Corporation, and several solar power generation project companies.

Main consolidated subsidiaries (end-June 2023)

Name	Location	Paid-in capital/capital contributions	Primary business	% of voting rights/stake(%)	Relationship with Abalance
1 Vietnam Sunergy Joint Stock Company	Vietnam	VND608,600mn	Solar Panel Manufacturing business	86.9	One concurrently serving officer
2 Vietnam Sunergy Europe GmbH	Germany	VND700mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
3 VNREE Co., Ltd	Vietnam	VND700mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
4 VSUN SOLAR USA Inc	US	VND3,400mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
5 VSUN China Co., Ltd	China	VND11,600mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
6 Vietnam Sunergy (Bac Ninh) Company Limited	Vietnam	VND743,100mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
7 Vietnam Sunergy Wafer Company Limited	Vietnam	VND240,000mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
8 TOYO Company Limited	The Cayman Islands (British Overseas Territory)	USD10,000	Solar Panel Manufacturing business	100.0	One concurrently serving officer
9 Vietnam Sunergy Cell Company Limited	Vietnam	VND1,150,000mn	Solar Panel Manufacturing business	100.0	One concurrently serving officer
10 WWB Corporation	Tokyo	JPY100mn	Green Energy business, Other businesses	100.0	One concurrently serving officer
11 Valors Corporation	Osaka	JPY100mn	Green Energy business	99.9	One concurrently serving officer
12 Valors Engineering Corporation	Osaka	JPY9mn	Green Energy business	99.9	One concurrently serving officer
13 WWB Solar 02 LLC	Tokyo	JPY0mn	Green Energy business	100.0	One concurrently serving officer
14 Kakuda Electric Fuel Development Silent Partnership	Tokyo	JPY610mn	Green Energy business	100.0	
15 Companio Solar Co., Ltd.	Osaka	JPY1mn	Green Energy business	99.9	
16 Japan Mirai Energy Co., Ltd	Tokyo	JPY30mn	Green Energy business	100.0	
17 J.MIRAI Co., Ltd.	Tokyo	JPY3mn	Green Energy business	100.0	
18 PV Repower inc.	Tokyo	JPY10mn	Green Energy business	51.0	One concurrently serving officer
19 Flex Holdings Co., Ltd.	Tokyo	JPY30mn	Green Energy business	100.0	
20 WWB Thang Long Corporation	Vietnam	VND2,500mn	Green Energy business	94.5	
21 Taiwa Town Solar Power LLC	Tokyo	JPY0mn	Green Energy business	100.0	
22 Ohira Village Solar Power LLC	Tokyo	JPY0mn	Green Energy business	100.0	
23 Digital Sign Co., Ltd.	Tokyo	JPY100mn	IT business	100.0	One concurrently serving officer
24 Japan Photocatalyst Center Corporation	Saga Pref.	JPY100mn	Photocatalyst business	93.3	Financial support. One concurrently serving officer
25 Birdy Fuel Cells LLC	Tokyo	JPY1mn	Energy storage system development business	50.0	One concurrently serving officer

Source: Shared Research based on company data

The company's reportable segments are categorized into two main business areas: Green Energy and Solar Panel Manufacturing. Additionally, under Other businesses, the company operates IT, photocatalyst, and activities involving the purchase, sale, and rental of construction machinery.

- ▶ Solar Panel Manufacturing business: In addition to manufacturing and selling solar panels, the company engages in the production and sale of upstream components, including cells, wafers, and ingots.
- ▶ Green Energy business: The company engages in the sale of solar power plants and related equipment and goods (one-time revenue business) and electricity sales from company-owned solar power plants (recurring revenue business).

Abalance's mainstay businesses are Solar Panel Manufacturing and Green Energy, each accounting for 95.6% and 4.0% of consolidated revenue in FY06/24, respectively. Solar Panel Manufacturing made up 97.8% of operating profit before adjustments and inclusion of Other businesses, while Green Energy accounted for 2.2%. Among the reportable segments, the segment profit margin was highest in Solar Panel Manufacturing at 11.9%, whereas Green Energy was lowest at 6.4%.

Revenue and segment profit compositions by reportable segment

(JPYmn)	FY06/24				Segment profit margin
	Revenue	% of total	Segment profit	% of total	
Reportable segment					
Solar Panel Manufacturing business	199,874	95.6%	23,876	97.8%	11.9%
Green Energy business	8,341	4.0%	532	2.2%	6.4%
Reportable segments total	208,215	99.6%	24,408	100.0%	11.7%
Other	771	0.37%	-258	-	-
Adjustments	-15	0.0%	-802	-	-
Total	208,972	100.0%	23,349	-	11.2%

Source: Shared Research based on company data

From Q1 FY03/25, the company reclassified its reportable segments, incorporating the IT and photocatalyst businesses under Other businesses.

Business overview by reportable segment

Solar Panel Manufacturing business (95.6% of consolidated revenue in FY06/24)

Major subsidiaries VSUN and TOYO manufacture and sell solar panels. VSUN procures raw materials from Europe, the US, and Asia, manufactures solar panels at its plants in Vietnam, and sells them overseas, mainly to the US, Europe and India directly or through overseas branches with sales branch functions.

While the top positions in the global solar panel manufacturer rankings are dominated by Chinese companies, VSUN maintains the largest production volume among the Japanese players.

Overview

The Solar Panel Manufacturing business is operated by VSUN and TOYO. VSUN was established in June 2015 and is headquartered in Bac Giang Province in northeastern Vietnam. It operates four panel manufacturing plants in Vietnam with a total annual production capacity of 4GW. Additionally, a 4GW cell factory was completed in late October 2023, and a 4GW ingot and wafer factory began operations in April 2024. TOYO currently manages the cell factory through subsidiary TOYO SOLAR.

Production capacity

VSUN has plants in Vietnam (in the Bac Giang and Bac Ninh Provinces) dedicated to the manufacture of solar panels. At end-FY06/24, annual production capacity expanded to a total of 4GW with the July 2021 commencement of operations at the third plant (annual production capacity of 1GW; capital expenditure of USD12mn) and the fourth plant (2.4GW; approximately USD30mn) in January 2023. Furthermore, a new wafer and ingot production plant with an annual capacity of 4GW began operations in April 2024.

TOYO SOLAR produces solar cells, a key component in solar panel manufacturing. In October 2023, it completed a cell factory with an annual production capacity of 4GW, with a total investment of approximately USD180mn. TOYO SOLAR had been considering a Phase 2 expansion of the cell factory (an additional 4GW capacity), but in August 2024, it decided to put the plan on hold due to changing market conditions, particularly in the US solar panel market. Meanwhile, recognizing the necessity of having a domestic manufacturing presence to expand its US operations, TOYO, the parent company of TOYO SOLAR, plans to establish a solar panel factory in the US with an annual production capacity of 2.5GW by end-2025. The plan includes securing 1GW capacity by mid-2025 in Phase 1, followed by a 1.5GW capacity expansion by year-end, bringing the total to 2.5GW.

The company plans to commence solar cell production in the Federal Democratic Republic of Ethiopia in addition to operating its solar panel plant in the US. Due to the increasing practical difficulty of exporting panels and cells from Vietnam to the US due to tariffs, the company selected Ethiopia as the new candidate location for cell production. The company currently recognizes no risk of anti-dumping (AD) or countervailing duties (CVD) being imposed on exports from Ethiopia to

the US. Additionally, factors such as infrastructure development, including electricity, and low labor costs contributed to the selection of this location. The total planned investment amount is approximately JPY9.0bn (primarily allocated to manufacturing equipment, with land and buildings secured via leasing). Construction is scheduled for completion in March 2025. The plant will have a production capacity of 2GW, with expected full-production revenue estimated at USD135mn annually. The company intends to export produced cells primarily to the planned solar panel factory in the US.

Electrical power is measured in terms of watts: one gigawatt (GW) equals one thousand megawatts (MW), which equals one million kilowatts (kW), or one billion watts (W). A typical reactor at a nuclear power plant can produce around one gigawatt of electricity, enough to power roughly 300,000 homes. Kilowatt hour (kWh) refers to the measure of energy equivalent to the expenditure of one kilowatt (1kW=1,000W) for one hour.

Production plants



Source: Company materials

Note: Panel factory (left); cell plant (right)

Solar panel manufacturing processes

The main manufacturing processes for solar panels begin with the creation of a silicon block called ingot. The ingot is then sliced to make silicon wafers, which are subsequently formed into solar cells. Multiple solar cells are then assembled to make solar panels (also referred to as solar modules). In Solar Panel Manufacturing business of the Abalance group, in addition to solar panel production, which is the final step in the process, a cell plant began operations in October 2023, and a wafer plant started in April 2024.

VSUN's solar panels

Although VSUN's production scale is still small compared to major manufacturers, it is top among Japanese manufacturers, gaining recognition from third-party organizations not only for the quality, reliability, and functionality of its solar panels, but also in terms of its procurement standards. It has also cleared the strict quality standards of major purchasers such as French petroleum company TotalEnergies SE (NYSE: TTE; Euronext: TTE) and French energy and gas company Engie SA (Euronext: ENGI).

From 2021 to 2023, VSUN was selected as a "Top Performer" in the PV Module Reliability Scorecard (released by US-based PV Evolution Labs [PVEL]) for three consecutive years. Also, in an assessment conducted by EcoVadis—a global rating agency based in France that assesses companies' sustainable sourcing including their action toward human rights issues, VSUN was awarded a Bronze Medal for the second consecutive year since 2021.

The PV Module Reliability Scorecard is a report released since 2012 by US-based independent organization PV Evolution Labs (PVEL), which tests the reliability and performance of solar panels. The report outlines the results of tests conducted by PVEL annually under its product certification program, based on which the brands producing solar panels of superior reliability and durability are certified as Top Performers. (<https://modulescorecard.pvel.com/top-performers/>).

EcoVadis is a global third-party organization that comprehensively evaluates the CSR activities and sustainability of companies with global supply chains in the four areas of the environment, labor and human rights, ethics, and sustainable procurement. Supply chains rated above a certain level in this assessment are socially recognized as being free of particular risks, and in recent years the results of the assessment have been widely used in the United States, Europe, and Japan.

Abalance has been disclosing the key financial information on VSUN (a specified subsidiary) in its annual securities report since FY06/21. In FY06/24, VSUN accounted for 37.4% of consolidated revenue and 38.6% of recurring profit. These proportions declined compared to FY06/23 due to a change in disclosure method from consolidated to standalone for

VSUN starting in FY06/24. VSUN reported revenue of JPY78.2bn, recurring profit of JPY9.6bn, and RPM of 12.3% in FY06/24.

According to TOYO's financial results for 1H FY12/24, following its listing on NASDAQ in July 2024, it reported revenue of USD138.1mn. Of this, USD112.2mn came from sales to affiliated companies, while USD25.8mn came from sales to third parties. TOYO's operating profit for the period was USD22.5mn.

VSUN: Key financials

Vietnam Sunergy Joint Stock Company (JPYmn)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Revenue							21,013	67,429	206,811	78,240
YoY	-	-	-	-	-	-	-	220.9%	206.7%	-
% of consolidated revenue	-	-	-	-	-	-	78.1%	73.2%	96.1%	37.4%
Recurring profit							785	1,307	13,879	9,616
YoY	-	-	-	-	-	-	-	66.5%	961.9%	-
Recurring profit margin	-	-	-	-	-	-	3.7%	1.9%	6.7%	12.3%
% of consolidated recurring revenue	-	-	-	-	-	-	61.9%	92.2%	98.9%	38.6%
Net income							718	1,213	12,208	7,873
YoY	-	-	-	-	-	-	-	68.9%	906.4%	-
Net margin	-	-	-	-	-	-	3.4%	1.8%	5.9%	10.1%
% of consolidated net income	-	-	-	-	-	-	77.1%	77.9%	102.3%	39.0%
Net assets							2,762	5,222	18,217	28,513
YoY	-	-	-	-	-	-	-	89.1%	248.9%	-
% of consolidated net assets	-	-	-	-	-	-	57.8%	65.7%	80.0%	67.2%
Total assets							16,894	44,967	104,666	85,975
YoY	-	-	-	-	-	-	-	166.2%	132.8%	-
% of consolidated total assets	-	-	-	-	-	-	42.9%	52.8%	72.8%	57.3%
Equity ratio	-	-	-	-	-	-	16.3%	11.6%	17.4%	33.2%
ROE(Net income)	-	-	-	-	-	-	26.0%	23.2%	67.0%	27.6%
ROA (Net income)	-	-	-	-	-	-	4.3%	2.7%	11.7%	9.2%

Source: Shared Research based on company data

Green Energy business (4.0% of consolidated revenue in FY06/24)

In this business, the company trades solar power plants, sells solar panels and related products, owns power plants, and also engages in the development, construction, operation, and maintenance work associated with solar plants. WWB, Valors, and other consolidated subsidiaries and equity-method affiliates are charged with the actual business operations. The Green Energy segment further breaks down into the one-time revenue business and the recurring revenue business, each accounting for 47.0% and 53.0% of segment revenue in FY06/23, respectively.

Recurring revenue business

In this business, the company uses the solar power plants under its ownership to generate electricity, which it sells to power utilities. The company either develops these facilities on its own or acquires them from other parties through M&A. The electricity being sold mainly falls under the feed-in tariff (FIT) scheme (see below for details). In August 2023, the company, WWB, and Mitsui & Co. Plant Systems Ltd. (unlisted, wholly owned subsidiary of Mitsui & Co., Ltd. PRM 8031) signed an MOU for the joint development of an offsite corporate PPA-type solar power generation project and agreed to study the project with the aim of realizing a decarbonized society, and intends to focus on PPA.

Solar power plants in operation

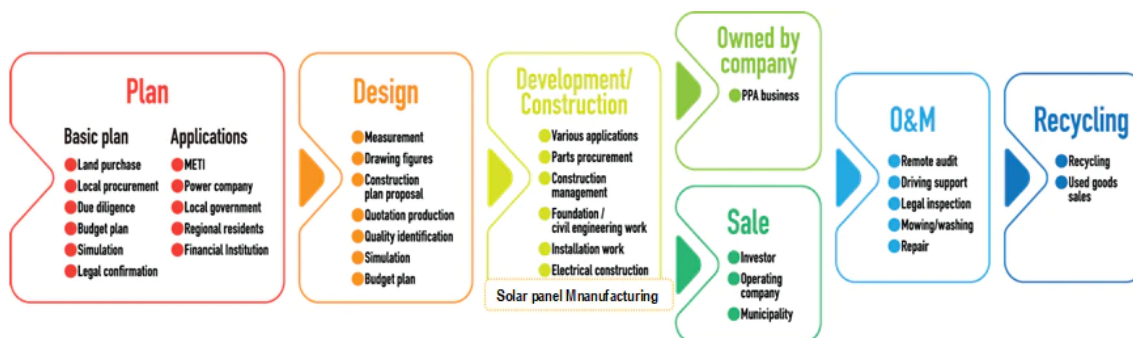
The company's solar power plants currently in operation include those developed in-house and those acquired through M&A. With over 110 power plants, primarily in Japan, the total output capacity comes to over 140MW. The Abalance group seeks to increase this capacity to 1GW by 2030, using proprietary power plants in Japan and overseas.

The company has so far focused on the ownership of power plants that utilized the FIT scheme, but will also focus efforts on feed-in premium (FIP) schemes, self-consumption, and other non-FIT projects.

One-time revenue business

In this business, the company trades a wide range of power generation facilities (home-use, industrial, pre-used, and other) and sells goods associated with power generation equipment. It also offers end-to-end solar energy solutions to companies and households through direct sales, agents, and other channels.

End-to-end services



Source: Shared Research based on company data

Customers

Customers in the Green Energy recurring revenue business are the buyers of electricity generated by the company's power plants. For power plants operating under the FIT scheme, they are power utilities. In the one-time revenue business, investors are the primary counterparts in power plant trades. Companies and consumers are the customers for solar panel products, which the company sells directly and through distributors.

VSUN sells industrial and home-use solar panels to Solar Panel Manufacturing customers mainly in the US, Europe, and other countries.

Sales channels

Sales in the Green Energy recurring revenue business is mainly handled by WWB. In the one-time revenue business, the company engages in power plant trades, sells power generation facility-related products, and provides end-to-end solutions from power plant planning to operation and maintenance, mainly through direct sales using the distributors/agents of WWB and Valors.

In the Solar Panel Manufacturing business, industrial and home-use solar panels are sold to the US, Europe, and other regions directly from VSUN or through overseas branches. VSUN has sales companies in the US, Germany, and China.

Earnings structure

Revenue

In the Green Energy recurring revenue business, the company generates revenue from its solar power plants operating under the FIT scheme. Here, revenue is a function of power generation income per kWh and the volume of electricity sold. The company does not disclose the amount of electricity it sells. The one-time revenue business comprises mainly total product sales related to solar power generation in the Green Energy business. A simple division of FY06/24 revenue in the recurring revenue business by 140MW (total output capacity of the company's power plants) yielded roughly JPY32,000 per kW (Shared Research estimated value).

Revenue in the Solar Panel Manufacturing business is a function of the unit price of solar panels and the sales volume, but the company does not disclose figures such as its solar panel shipment volume.

Revenue trends

By reportable segment, in FY06/14, Construction Machinery Sales accounted for 22.1% of revenue, IT business 7.7%, and Green Energy business (Solar Power Generation business until FY06/17) 70.2%. With the expansion of the Green Energy business from FY06/17, its revenue mix grew to 86.8%. In FY06/21, the Solar Panel Manufacturing and Photocatalyst businesses—formerly under Other businesses—were reclassified and added as a new reportable segment in line with the conversion of VSUN to a consolidated subsidiary, resulting in four reportable segments. However, starting in FY03/25, the company streamlined its reportable segments to two: Solar Panel Manufacturing and Green Energy.

Revenue by segment

Revenue by segment (JPYmn)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Solar Panel Manufacturing business							21,013	81,775	206,811	199,874
YoY	-	-	-	-	-	-	-	-289.2%	152.9%	-3.4%
% of revenue	-	-	-	-	-	-	78.1%	88.8%	96.1%	95.6%
Green Energy business	3,455	3,940	5,636	6,513	5,178	6,248	5,311	9,921	8,002	8,341
YoY	47.1%	14.0%	43.0%	15.6%	-20.5%	20.7%	-15.0%	86.8%	-19.3%	4.2%
% of revenue	78.6%	86.8%	86.8%	89.2%	86.5%	93.6%	19.7%	10.8%	3.7%	4.0%
IT business	153	90	101	81	172	58	61	292	677	590
YoY	-40.9%	-41.3%	12.3%	-19.5%	111.7%	-66.3%	5.2%	378.7%	131.8%	-12.9%
% of revenue	3.5%	2.0%	1.6%	1.1%	2.9%	0.9%	0.2%	0.3%	0.3%	0.3%
Photocatalyst business							112	177	80	41
YoY	-	-	-	-	-	-	58.0%	-54.8%	-50.0%	2.5%
% of revenue	-	-	-	-	-	-	1.7%	0.7%	0.0%	0.0%
Construction Machinery Sales business	788	510	758	706	596					
YoY	6.8%	-35.3%	48.7%	-6.9%	-15.6%	-	-	-	-	-
% of revenue	17.9%	11.2%	11.7%	9.7%	10.0%	-	-	-	-	-
Reportable segments total	4,396	4,540	6,495	7,301	5,946	6,565	26,563	92,070	215,531	208,847
YoY	31.4%	3.3%	43.1%	12.4%	-18.6%	10.4%	304.6%	246.6%	134.1%	-3.1%
% of revenue	100.0%	100.0%	100.0%	100.0%	99.4%	98.3%	98.7%	99.9%	100.1%	99.9%
Other businesses and adjustments	0	0	0	0	39	257	339	52	-246	125
YoY	-	-	-	-	-	561.2%	31.9%	-84.7%	-	-
% of revenue	-	-	-	-	0.6%	3.8%	1.3%	0.1%	-	0.1%
Total	4,396	4,540	6,495	7,301	5,985	6,678	26,901	92,122	215,284	208,972
YoY	31.4%	3.3%	43.1%	12.4%	-18.0%	11.6%	302.8%	242.4%	133.7%	-2.9%

Source: Shared Research based on company data

Note: The Green Energy business was referred to as the Solar Power Generation business through FY06/17; same hereinafter

Any differences between figures in the table and those in company data are due to rounding

Revenue composition by region

Revenue composition by region

Revenue composition by region(JPYmn)	FY06/21		FY06/22		FY06/23		FY06/24	
	Revenue	% of total	Revenue	% of total	Revenue	% of total	Revenue	% of total
Japan	5,533	20.6%	10,792	11.7%	8,605	4.0%	9,089	4.3%
Asia	16,781	62.4%	1,526	1.7%	1,051	0.5%	47,079	22.5%
North America	2,643	9.8%	68,185	74.0%	186,684	86.7%	143,783	68.8%
Europe	1,943	7.2%	3,719	4.0%	10,527	4.9%	8,621	4.1%
Other	0	0.0%	7,898	8.6%	8,416	3.9%	397	0.2%
Total	26,901	100.0%	92,122	100.0%	215,284	100.0%	208,972	100.0%

Source: Shared Research based on company data

In FY06/24, the revenue composition by region was as follows: North America accounted for 68.8%, Asia (including India) for 22.5%, Japan for 4.3%, Europe for 4.1%, and other regions for 0.2%. While revenue from the US grew between FY06/21 and FY06/23, its share decreased in FY06/24 due to shifts in US energy policies under the Biden administration and heightened efforts to reassess supply chains in response to rising geopolitical risks. The company remains focused on the US market but is also expanding solar panel-related product sales to other markets such as Europe and India to rebuild its global supply chain.

US tariff exemptions for solar power-related imports from Southeast Asia

In June 2022, President Biden declared a state of emergency regarding the shortage of solar cells and panels, and issued a presidential proclamation instructing the Secretary of Commerce to take appropriate measures. These included tariff exemptions for imports of solar power-related products from Cambodia, Malaysia, Thailand, and Vietnam for a maximum period of 24 months (“Declaration of Emergency and Authorization for Temporary Extensions of Time and Duty-Free Importation of Solar Cells and Modules from Southeast Asia”).

The proclamation spoke of the solar panel bottleneck emerging in the US. The majority of solar modules installed in the US are imported, and in 2020, three-quarters of these imports came from Southeast Asia. That said, due to increasing demand for solar power generation driven by the climate change, carbon neutrality efforts, and rising energy prices, the current level of panel imports no longer satisfies the growing demand in the US.

In August 2023, the US Department of Commerce issued its final decision that several solar product manufacturers with Chinese origins were circumventing the Anti-Dumping Duties (AD) and Countervailing Duties (CVD) placed on Chinese solar products (cells and modules) by routing their products through four Southeast Asian countries (Cambodia, Malaysia, Thailand, Vietnam) before exporting them to the US (if conditions are met, the products are not subject to tax until June 2024). VSUN is neither recognized as a circumventing nor as a non-circumventing company, and under US related laws and regulations, if evidence is found that products are completed or assembled in a third country with the intention to evade AD or CVD, the US Department of Commerce may conduct an investigation.

In May 2024, the Biden administration announced that the US’s tariff exemption measures for four Southeast Asian countries, introduced in June 2022, will end as scheduled on June 6, 2024. From that date onward, imports from these four countries, determined to be circumventing AD and CVD imposed on Chinese imports, will be subject to AD and CVD investigations. The US Department of Commerce will continue to monitor imports to ensure that the US market does not become saturated due to Chinese companies that have increased their production capacities in Southeast Asia to avoid these duties.

In November 2024, the US Department of Commerce issued a preliminary decision on November 27 to impose AD on solar cells manufactured in four Southeast Asian countries—Cambodia, Malaysia, Thailand, and Vietnam. Since May 2024, the US government had been conducting an investigation to determine whether to impose AD and CVD on solar cells from these countries. With the preliminary decision, AD collection will begin on the same day as its publication in the Federal Register. The US Department of State has scheduled the final decision for mid-April 2025. Meanwhile, for CVD, a preliminary decision was already announced on October 1, and collection began on October 4.

Cost of revenue

The company had maintained a cost ratio of 80% or lower through FY06/20, prior to the conversion of VSUN to a consolidated subsidiary. However, this figure rose to over 80.0% in FY06/21. By FY06/24, the cost ratio had dropped back below 80% due to the in-house production of cells, ingots, and wafers. Shared Research SR understands that cost of revenue includes solar panel costs and the sales costs of solar power generation-related products in the Green Energy business. The company has been working to stabilize procurement by shifting from sourcing materials from Europe, the US, and Asia to in-house production of cells, ingots, and wafers.

Income statement (JPYmn)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Revenue	4,396	4,540	6,495	7,301	5,985	6,678	26,901	92,122	215,284	208,972
YoY	31.4%	3.3%	43.1%	12.4%	-18.0%	11.6%	302.8%	242.4%	133.7%	-2.9%
Cost of revenue	3,315	3,432	5,006	5,123	4,112	4,916	22,112	82,508	185,663	164,398
YoY	27.1%	3.5%	45.9%	2.3%	-19.7%	19.6%	349.8%	273.1%	125.0%	-11.5%
Cost ratio	75.4%	75.6%	77.1%	70.2%	68.7%	73.6%	82.2%	89.6%	86.2%	78.7%
Gross profit	1,081	1,108	1,489	2,178	1,873	1,762	4,788	9,613	29,621	44,573
YoY	46.5%	2.5%	34.4%	46.3%	-14.0%	-5.9%	171.7%	100.8%	208.1%	50.5%
Gross profit margin	24.6%	24.4%	22.9%	29.8%	31.3%	26.4%	17.8%	10.4%	13.8%	21.3%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

SG&A expenses

The SG&A ratio, which trended around 20% from FY06/17 to FY06/20, fell to 12.7% in FY06/21, and has been around 8–10% since FY06/22. Of the SG&A expenses in FY06/24, container freight costs and commission expenses made up the largest share at 6.0% of the total, followed by salaries, allowances, and bonuses at 1.8%, and goodwill amortization at 0.2%. Other expenses also constituted a large portion of total SG&A expenses at 1.9%, including customs duties paid by VSUN when exporting solar panels.

SG&A expenses (JPYmm)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
SG&A expenses	660	710	1,374	1,251	1,265	1,400	3,427	8,007	16,816	21,224
YoY	39.3%	7.6%	93.3%	-8.9%	1.1%	10.7%	144.7%	133.6%	110.0%	26.2%
SG&A ratio	15.0%	15.6%	21.1%	17.1%	21.1%	21.0%	12.7%	8.7%	7.8%	10.2%
Commission expenses	103	129	327	221	256	229	492	1,640	7,626	12,527
YoY	43.2%	25.5%	153.7%	-32.4%	15.7%	-10.5%	114.7%	233.3%	365.0%	64.3%
% of revenue	2.3%	2.8%	5.0%	3.0%	4.3%	3.4%	1.8%	1.8%	3.5%	6.0%
Salaries, allowances and bonuses	210	221	303	367	361	400	678	865	2,312	3,700
YoY	36.9%	5.4%	37.3%	21.2%	-1.8%	10.8%	69.6%	27.6%	167.3%	60.0%
% of revenue	4.8%	4.9%	4.7%	5.0%	6.0%	6.0%	2.5%	0.9%	1.1%	1.8%
Depreciation	5	4	21	26	32	25	28	350	509	137
YoY	-14.6%	-26.9%	474.6%	20.4%	24.8%	-20.8%	11.0%	-	45.4%	-73.1%
% of revenue	0.1%	0.1%	0.3%	0.3%	0.5%	0.4%	0.1%	0.4%	0.2%	0.1%
Amortization of goodwill	17	17	34	101	107	77	12	147	375	401
YoY	0.0%	0.0%	94.4%	200.0%	5.7%	-27.9%	-84.5%	-	155.1%	6.9%
% of revenue	0.4%	0.4%	0.5%	1.4%	1.8%	1.2%	0.0%	0.2%	0.2%	0.2%
Directors' compensations	84	91	96	113	118	133	109	115	134	120
YoY	43.9%	8.0%	6.1%	17.9%	4.2%	12.9%	-18.3%	5.5%	16.5%	-10.4%
% of revenue	1.9%	2.0%	1.5%	1.6%	2.0%	2.0%	0.4%	0.1%	0.1%	0.1%
R&D expenses	30	-	12	0	-	-	-	74	70	289
YoY	-	-	-	-98.0%	-	-	-	-	-5.4%	312.9%
% of revenue	0.7%	-	0.2%	0.0%	-	-	-	0.1%	0.0%	0.1%
Provision for doubtful accounts	0	12	182	13	-54	12	18	8	35	164
YoY	-	-	1422.5%	-93.1%	-	-	44.3%	-55.6%	337.5%	368.6%
% of revenue	-	0.3%	2.8%	0.2%	-	0.2%	0.1%	0.0%	0.0%	0.1%
Other	212	237	398	410	446	523	2,090	4,808	5,755	3,886
YoY	28.0%	11.9%	67.9%	3.0%	8.8%	17.4%	299.4%	130.0%	19.7%	-32.5%
% of revenue	4.8%	5.2%	6.1%	5.6%	7.4%	7.8%	7.8%	5.2%	2.7%	1.9%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

Operating profit

Operating profit for FY06/24 reached a record high, driven primarily by the operation of the cell factory, a key component in the Solar Panel Manufacturing business. This enabled in-house cell production, reducing production costs, stabilizing component procurement, and enhancing the company's ability to respond to import regulations in various countries.

Segment profit (JPYmm)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Solar Panel Manufacturing business	-	-	-	-	-	-	731	1,238	12,701	23,876
YoY	-	-	-	-	-	-	-	69.4%	925.9%	88.0%
% of total	-	-	-	-	-	-	40.9%	52.9%	92.1%	97.6%
Green Energy business	539	625	529	1,297	932	817	1,005	1,112	1,076	532
YoY	98.7%	16.0%	-15.5%	145.4%	-28.2%	-12.3%	23.0%	10.6%	-3.2%	-50.6%
% of total	89.2%	99.7%	100.9%	105.5%	93.4%	112.4%	56.3%	47.5%	7.8%	2.2%
IT business	29	4	26	8	63	-41	16	7	47	40
YoY	-66.0%	-85.7%	538.0%	-68.6%	658.5%	-	-	-56.3%	571.4%	-14.9%
% of total	4.8%	0.7%	5.0%	0.7%	6.3%	-5.6%	0.9%	0.3%	0.3%	0.2%
Photocatalyst business	-	-	-	-	-	-	32	-17	-40	2
YoY	-	-	-	-	-	-	-	-	-	-
% of total	-	-	-	-	-	-	1.8%	-0.7%	-0.3%	0.0%
Construction Machinery Sales business	37	-2	-31	-76	3	-50	-	-	-	-
YoY	-50.5%	-	-	-	-	-	-	-	-	-
% of total	6.1%	-0.3%	-5.9%	-6.1%	0.3%	-6.8%	-	-	-	-
Reportable segments total	605	627	524	1,230	997	727	1,786	2,341	13,785	24,452
YoY	40.5%	3.7%	-16.5%	134.7%	-18.9%	-27.1%	145.7%	31.1%	488.9%	77.4%
% of total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Other	0	0	0	0	-20	-6	-54	-45	-120	-300
YoY	-	-	-	-	-	-	-	-	-	-
Adjustments	-184	-230	-409	-303	-369	-359	-370	-689	-860	-802
YoY	-	-	-	-	-	-	-	-	-	-
Total	420	397	115	927	608	362	1,361	1,605	12,804	23,349
YoY	59.5%	-5.5%	-71.0%	704.7%	-34.4%	-40.5%	276.4%	17.9%	697.8%	82.4%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

OPM

Much like consolidated revenue and operating profit, OPM reached a record 12.7% in FY06/18, but has since trended lower. In FY06/21, OPM declined to 5.1% due to the impact of VSUN becoming a consolidated subsidiary, then to 1.7% in FY06/22 due to raw material price hikes and other factors. In FY06/23, it rose to 5.9% due to the easing of raw material price hikes and price pass-throughs. In FY06/24, strong sales of solar panels by VSUN, along with the progress in in-house production of cells and wafers, significantly boosted profit margins. Among segment profit margins, the Solar Panel Manufacturing business achieved the highest at 11.9%, followed by the IT business at 6.8%, the Green Energy business at 6.4%, and the Photocatalyst business at 4.9%.

Segment profit margin (%)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Solar Panel Manufacturing business	-	-	-	-	-	-	-	3.5%	1.5%	6.1%
Green Energy business	15.6%	15.9%	9.4%	19.9%	18.0%	13.1%	18.9%	11.2%	13.4%	6.4%
IT business	18.8%	4.6%	26.0%	10.2%	36.4%	-	26.2%	2.4%	6.9%	6.8%
Photocatalyst business	-	-	-	-	-	-	18.1%	-	-	4.9%
Construction Machinery Sales business	4.7%	-	-	-	0.4%	-	-	-	-	-
Reportable segments total	13.8%	13.8%	8.1%	16.8%	16.8%	11.1%	6.7%	2.5%	6.4%	11.7%
Total	9.6%	8.8%	1.8%	12.7%	10.2%	5.4%	5.1%	1.7%	5.9%	11.2%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

Capital expenditures

Purchases of solar power plants and equipment for solar panel manufacturing have been the main reasons behind changes in capital expenditures. In FY06/21, capital expenditures accounted for 23.4% of consolidated revenue because of such purchases, but the percentage dropped to 6.2% in FY06/23 and 4.6% in FY06/24.

Capital expenditures (JPYmm)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Total capital expenditures	151	60	434	408	2,096	1,408	6,290	4,406	13,258	9,629
% of revenue	3.4%	1.3%	6.7%	5.6%	35.0%	21.1%	23.4%	4.8%	6.2%	4.6%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

Earning potential

In FY06/24, ROE and ROA rose YoY to 52.4% and 16.9%, respectively. ROE slightly declined YoY, while ROA grew. The average period in inventory fell from 4.3 months in FY06/21 to 2.7 months in FY06/24. The average accounts receivable turnover period was one month or less for all fiscal years, while the average accounts payable turnover period declined from 1.6 months in FY06/21 to 1.0 months in FY06/24. As a result, the cash conversion cycle also declined from 3.0 months to 1.8 months. The company is working to optimize its overall supply chain, spanning from order receipt to production and shipping, to maintain and enhance profitability.

Profit margins (JPYmm)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Revenue	4,396	4,540	6,495	7,301	5,985	6,678	26,901	92,122	215,284	208,972
Cost of revenue	3,315	3,432	5,006	5,123	4,112	4,916	22,112	82,508	185,663	164,398
Gross profit	1,081	1,108	1,489	2,178	1,873	1,762	4,788	9,613	29,621	44,573
Operating profit	420	397	115	927	608	362	1,361	1,605	12,804	23,349
YoY	59.5%	-5.5%	-71.0%	704.7%	-34.4%	-40.5%	276.4%	17.9%	697.8%	82.4%
Operating profit margin	9.6%	8.8%	1.8%	12.7%	10.2%	5.4%	5.1%	1.7%	5.9%	11.2%
Net income attributable to owners of the parent	200	231	-176	757	316	211	537	806	4,965	9,530
YoY	-14.6%	15.8%	-	-	-58.2%	-33.1%	154.2%	50.1%	516.0%	91.9%
Net margin	4.5%	5.1%	-	10.4%	5.3%	3.2%	2.0%	0.9%	2.3%	4.6%
Inventory(Merchandise and finished goods, Work in process, Raw materials and supplies)	600	1,051	3,061	3,987	3,804	5,000	10,947	30,552	53,168	20,292
YoY	-2.2%	75.3%	191.3%	30.2%	-4.6%	31.4%	118.9%	179.1%	74.0%	-61.8%
% of total assets	23.7%	37.7%	47.8%	55.5%	34.6%	33.9%	27.8%	35.9%	37.0%	13.5%
Accounts receivable	525	473	335	335	393	303	1,312	6,156	2,011	3,558
YoY	28.5%	-9.9%	-29.2%	0.2%	17.2%	-22.8%	332.5%	369.2%	-67.3%	76.9%
% of total assets	20.7%	16.9%	5.2%	4.7%	3.6%	2.1%	3.3%	7.2%	1.4%	2.4%
Accounts payable	436	529	331	411	533	991	5,058	14,595	16,412	12,252
YoY	-15.2%	21.3%	-37.3%	23.9%	29.8%	86.0%	410.4%	188.6%	12.4%	-25.3%
% of total assets	17.2%	18.9%	5.2%	5.7%	4.8%	6.7%	12.8%	17.1%	11.4%	8.2%
Shareholders' equity(excl. stock acquisition rights and non-controlling interests)	1,038	1,219	1,077	1,767	1,969	2,093	4,006	5,873	12,596	23,800
YoY	20.2%	17.4%	-11.6%	64.0%	11.4%	6.3%	91.4%	46.6%	114.5%	88.9%
% of total assets	41.0%	43.7%	16.8%	24.6%	17.9%	14.2%	10.2%	6.9%	8.8%	15.8%
Total assets	2,531	2,790	6,400	7,189	10,985	14,765	39,388	85,121	143,691	150,173
YoY	22.1%	10.2%	129.4%	12.3%	52.8%	34.4%	166.8%	116.1%	68.8%	4.5%
% of total assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cash flows from operating activities	57	206	-984	405	-147	-861	-608	-6,449	18,526	44,757
Cash flows from investing activities	-252	-75	-864	-559	-1,620	-472	-1,391	-13,221	-20,670	-21,191
FCF	-195	131	-1,848	-155	-1,766	-1,333	-1,999	-19,670	-2,144	23,566
Cash flows from financing activities	104	-85	1,991	-62	1,913	1,465	5,290	17,752	17,235	-5,446
ROA (RP-based)	14.7%	16.0%	1.1%	12.9%	6.2%	2.4%	4.7%	2.3%	12.3%	16.9%
Return on equity(ROE)	21.0%	20.5%	-15.3%	53.2%	16.9%	10.4%	17.6%	16.3%	53.8%	52.4%
Tangible fixed asset turnover(excl. construction in progress)	25.1	22.0	9.0	5.5	2.7	2.1	3.1	5.6	9.8	5.9
Total asset turnover	1.9	1.7	1.4	1.1	0.7	0.5	1.0	1.5	1.9	1.4
Inventory turnover	5.5	4.2	2.4	1.5	1.1	1.1	2.8	4.0	4.4	4.5
Average period in inventory(months) ①	2.2	2.9	4.9	8.3	11.4	10.7	4.3	3.0	2.7	2.7
Accounts receivable turnover period(months) ②	1.3	1.3	0.7	0.6	0.7	0.6	0.4	0.5	0.2	0.2
Accounts payable turnover period(months) ③	1.7	1.7	1.0	0.9	1.4	1.9	1.6	1.4	1.0	1.0
Cash conversion cycle(months) ①+②-③	1.7	2.5	4.6	7.9	10.7	9.5	3.0	2.1	1.9	1.8

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

Financial standing

In FY06/24, shareholders' equity (excluding subscription rights and noncontrolling interests) increased to JPY23.8bn due to capital increases and accumulated profits. The equity ratio was 15.8%, up from 8.8% in FY06/23. To ensure financial soundness, the company plans to continue strengthening its equity by accumulating retained earnings through the growth of its Solar Panel Manufacturing and Green Energy businesses.

Financial ratios	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Shareholders' equity(excl. stock acquisition rights and non-controlling interests)	1,038	1,219	1,077	1,767	1,969	2,093	4,006	5,873	12,596	23,800
Equity ratio	41.0%	43.7%	16.8%	24.6%	17.9%	14.2%	10.2%	6.9%	8.8%	15.8%

Source: Shared Research based on company data

Any differences between figures in the table and those in company data are due to rounding

Market and value chain

Here, we will primarily focus on the solar panel market, where the mainstay businesses of the Abalance group belong. While there are no official statistics indicating the global market size for solar panels alone, the International Energy Agency (IEA) gives an estimate of the overall solar power generation market in its "Trends in Photovoltaic Applications" report. In Japan, Yano Research Institute Ltd. (unlisted; hereinafter "Yano Research Institute") publishes forecasts on the amount of solar power generation installed in Japan.

Solar power generation market

According to IEA, total revenue generated in the global solar power sector, including revenue from silicon, wafers, cells, and panels, reached USD400bn in 2023 (approximately JPY56tn based on average exchange rate of JPY140/USD), up 73.9% YoY. This figure was calculated, taking into account the solar panel (PV) annual installations, cumulative installations, and average cost of installation. Neither the base figures of the calculations, such as volume and per-unit value, nor data on future outlook are disclosed in the IEA report.

Total revenue generated in the global solar power sector grew at a CAGR of 24.8% over the past five years, with particularly strong growth recorded in 2023. Since IEA does not disclose the details of its calculations, we attempted to estimate the value of PV per GW by simply dividing the total revenue by the PV annual installation data (in GW) in the IEA report. The Shared Research estimate (referred to as "reference value" in the table below) showed that from 2019, total revenue in the solar power sector grew due to an increase in the amount of PV installations, which more than compensated for the decline in unit value per GW. Notably, in 2022 and 2023, unit value declines exceeded 10%, with volume growth acting as the primary driver of revenue expansion.

Total revenue generated by the global solar power generation market

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Five-year CAGR	10-year CAGR
Total revenue(USDmn)	82,000	80,000	110,000	110,000	132,000	135,000	160,000	190,000	230,000	400,000		
YoY	-4.7%	-2.4%	37.5%	0.0%	20.0%	2.3%	18.5%	18.8%	21.1%	73.9%	24.8%	16.6%
(Reference value)												
PV annual installations(GW)	40	51	77	103	105	113	146	174	236	456		
YoY	6.1%	25.9%	52.1%	34.0%	1.7%	7.9%	28.9%	19.2%	36.0%	93.2%	34.2%	28.3%
Unit value(per GW, USDmn)	2,045	1,584	1,432	1,069	1,262	1,196	1,100	1,095	975	877		
YoY	-10.1%	-22.5%	-9.6%	-25.4%	18.0%	-5.2%	-8.0%	-0.4%	-11.0%	-10.0%	-7.0%	-9.1%

Source: Shared Research based on data from the respective years' "Trends in Photovoltaic Applications" report published by the International Energy Agency

Global electricity demand and supply; output capacity

Outlook on global electricity demand and supply

The World Energy Outlook 2024 report (the WEO) predicts that global energy systems will be transformed over the next decade as power supply systems are reshaped by the rise of solar, wind, electric vehicles, heat pumps, and other clean energy technologies. Global electricity demand will increase in all scenarios due to population growth, rising incomes, and increasing end-use electrification. By 2050, electricity demand is expected to grow 85.0% from 2023 levels in the stated policies scenario (STEPS), 102% in the announced pledges scenario (APS), and 107% in the net zero emissions by 2050 scenario. Additional demand will be met primarily by renewable energy, nuclear power, fossil fuels with CCUS, hydrogen, and ammonia, all of which will account for a higher share of electricity supply in each scenario.

WEO presents outlook in three scenarios

The WEO report presents three scenarios, providing a framework to explore the effects of various policy choices, investment trends, and technological developments on the projections. Assumptions for each of the scenarios are as follows.

- * **Stated policies scenario (STEPS)** shows the trajectory implied by current policy settings
- * **Announced pledges scenario (APS)** assumes all aspirational targets announced by countries—including their long-term net zero and energy access goals—are met in full and as scheduled
- * **Net zero emissions by 2050 scenario (NZE)** proposes a way to limit global warming to 1.5°C, achieving universal access to modern energy by 2030

Outlook on installed electricity capacity

The WEO also provides an outlook on installed electricity capacity by source. In all scenarios, installed capacity of solar and wind power is expected to expand the most. Solar power plant capacity is expected to grow under the STEPS scenario, from 1,610GW in 2023 to 5,838GW in 2030, 12,333GW in 2040, and 16,445GW in 2050. The APS and NZE scenarios require even larger growth in installed capacity.

Outlook on global installed capacity by power source

Outlook on installed capacity by power source	Results		STEPS			APS			NZE		
(GW)	2022	2023	2030	2040	2050	2030	2040	2050	2030	2040	2050
Total	8,768	9,436	15,922	25,400	31,436	16,969	29,423	37,593	17,093	32,510	41,298
Renewable energy	3,684	4,246	9,768	17,974	23,218	10,918	21,965	29,355	11,495	25,446	33,179
Solar	1,185	1,610	5,838	12,333	16,445	6,544	14,801	20,059	6,699	16,455	21,618
Wind	899	1,015	2,079	3,419	4,189	2,410	4,487	6,032	2,731	5,945	7,901
Hydroelectric	1,398	1,411	1,576	1,808	2,031	1,626	1,945	2,200	16,797	2,161	2,419
Biomass and other sources											
Nuclear	417	416	478	586	647	508	748	874	554	896	1,017
Hydrogen and Ammonia	-	-	7	24	20	29	202	273	118	458	443
Fossil fuels(using CCUS)	0	0	2	25	37	6	113	183	47	202	235
Fossil fuels	4,602	4,665	4,798	4,438	4,064	4,479	3,444	2,512	3,605	1,696	904
Storage battery	45	89	853	2,339	3,438	1,015	2,939	4,386	1,260	3,802	5,512

Source: "World Energy Outlook 2024" report released by the International Energy Agency

A Shared Research estimate on the required additions in installed capacity per year, based on the projections for solar power and wind power output capacities, showed that in the STEPS, the required addition per year came to 604GW through 2030, 631GW through 2040, and 549GW through 2050. Since output capacity increased by 425GW in 2023, the required addition of 604GW per year through 2030 based on STEPS (the most conservative scenario) surpasses this level, underscoring the significant growth needed to meet future energy demands.

Outlook on installed capacity for solar and wind power

Outlook on installed capacity for solar and wind power	Results		STEPS			APS			NZE		
(GW)	2022	2023	2030	2040	2050	2030	2040	2050	2030	2040	2050
Solar	1,185	1,610	5,838	12,333	16,445	6,544	14,801	20,059	6,699	16,455	21,618
Projected annual growth of installed capacity	95	425	604	631	549	705	776	683	727	873	741
Wind	899	1,015	2,079	3,419	4,189	2,410	4,487	6,032	2,731	5,945	7,901
Projected annual growth of installed capacity	60	116	152	141	118	199	204	186	245	290	255

Source: "World Energy Outlook 2024" report released by the International Energy Agency

The "Renewables 2024" report by the IEA provides historical data on solar power capacity by country and region. In 2023, the global installed solar power capacity was 1,612GW, with China having the largest share at 688GW, followed by the US at 170GW, Japan at 108GW, and India at 95GW. According to the "Renewables 2024" report, the global CAGR for solar power capacity from 2019 to 2023 was 25.5%. The forecast for capacity growth from 2024 to 2030 predicts a CAGR of 20.1%, which is lower than the 2019–2023 period but still indicates strong growth. Significant growth is expected in regions with large solar power capacities, with CAGRs of 24.8% in China, 14.1% in Europe, and 18.5% in the US. Additionally, strong growth is anticipated in India, Brazil, and the Middle East and North Africa. Conversely, Japan's growth is projected at a more modest CAGR of 6.1%.

Shared Research believes that regulations and industrial policies implemented by governments worldwide aiming to achieve carbon-neutral societies by 2050 are sustaining this high growth rate. According to the IEA, achieving net zero emissions by 2050 will require a total of 11,000GW of renewable energy capacity by 2030, including solar power. However, the IEA's 2030 forecast (main case) predicts a combined capacity of around 9,800GW, including 5,821GW from solar power and other renewables, indicating that the growth pace, even if sustained, will not reach 11,000GW by 2030.

Outlook on installed capacity by country and region

(GW)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	19 - 23	24 - 30	19 - 23	24 - 30
	Results	Results	Results	Results	Results	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Actual CAGR	Forecast CAGR	Actual Increase	Forecast Increase
Global	636	790	953	1,185	1,612	2,117	2,646	3,208	3,810	4,451	5,120	5,821	25.5%	20.1%	1,094	4,209
China	205	264	328	427	688	1,009	1,341	1,684	2,047	2,429	2,829	3,247	31.5%	24.8%	513	2,559
(Europe)	152	174	256	247	312	371	433	498	567	639	712	787	19.4%	14.1%	184	475
US	76	95	74	138	170	209	253	301	356	416	483	557	22.1%	18.5%	107	387
Japan	70	82	90	99	108	117	125	131	138	146	154	164	12.0%	6.1%	47	56
India	46	51	64	83	95	123	154	192	233	277	323	371	22.4%	21.5%	60	276
Germany	49	54	60	68	83	99	117	137	157	176	194	212	12.8%	14.4%	37	129
Brazil	5	9	15	27	42	56	71	86	99	111	122	131	74.0%	17.9%	39	90
Australia	17	22	26	31	35	40	43	47	52	89	62	67	25.3%	9.7%	24	32
Spain	10	12	16	25	34	40	44	48	54	59	64	69	48.3%	10.3%	30	34
Italy	21	22	23	25	30	37	42	47	53	60	68	76	8.6%	14.0%	10	45
South Korea	13	17	21	24	27	30	34	37	40	43	46	48	25.1%	8.5%	18	21
Netherlands	7	11	15	20	24	28	32	37	41	44	48	51	39.0%	11.3%	19	27
Middle East and North Africa	9	11	12	17	24	29	36	43	54	73	87	102	39.8%	23.3%	19	78
Vietnam	7	19	20	20	21	22	23	24	26	28	30	34	191.4%	6.9%	21	13
France	11	12	15	17	21	25	29	34	39	44	49	54	16.7%	14.5%	11	33
UK	15	15	16	16	18	20	24	27	31	37	43	50	3.5%	16.2%	3	33
Other	83	114	179	169	214	256	302	356	417	448	549	623	30.0%	16.5%	156	409

Source: "Renewables 2024" report released by the International Energy Agency

Note: Estimates are based on the main scenario

Solar panel production capacity, production, and prices

The IEA forecasts continued growth in solar power installed capacity alongside robust growth in solar panel production capacity. In 2023, production capacity surged by 53.9% YoY to 1,103GW, achieving a five-year CAGR of 43.1%. However, actual production in 2023 reached only 612GW (+61.7% YoY), resulting in a capacity utilization rate (production/production capacity) of 55.5%. A comparison of the CAGR of the past five years showed that production capacity has increased at a faster pace than production growth, causing the capacity utilization rate to trend around 50%.

Solar panel production and production capacity

(GW)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Five-year CAGR	10-year CAGR
Production capacity	67	94	105	155	184	219	327	483	717	1,103		
YoY	10.4%	39.3%	11.9%	47.7%	18.7%	19.2%	49.0%	47.8%	48.4%	53.9%	43.1%	33.6%
Production volume	46	63	78	105	116	140	179	242	379	612		
YoY	15.3%	36.3%	24.6%	34.7%	10.3%	21.0%	27.9%	35.0%	56.2%	61.7%	39.5%	31.4%
Capacity utilization rate(%)	68.3%	66.9%	74.4%	67.9%	63.1%	64.0%	54.9%	50.2%	52.8%	55.5%		

Source: Shared Research based on data from the "Trends in Photovoltaic Applications 2024" report by the International Energy Agency

The global prices of solar panels (modules) have been declining as the market expands. In 2015, the module price was approximately USD0.55 per watt, but by October 2024, it had dropped to USD0.10 per watt. Although prices temporarily increased in 2021 and 2022 due to a surge in demand driven by strong green policies in Europe and the US amid the COVID-19 pandemic, the long-term trend over the past decade has been a steady decline. In 2023, prices fell further as a result of capital investments in China. The prices of materials used in modules, such as cells, wafers, and polysilicon, have shown similar price fluctuations, with greater volatility observed further upstream in the supply chain.

Solar panel prices

(USD)		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Polycrystalline silicon	per kg	17.73	19.47	12.83	14.6	16.65	9.02	7.74	9.66	35.82	39.9	14.4	12.1
YoY			9.8%	-34.1%	13.8%	14.0%	-45.8%	-14.2%	24.8%	270.8%	11.4%	-63.9%	-16.0%
Wafer(monocrystalline)	per wafer	1.17	1.16	0.89	0.79	0.72	0.38	0.39	0.42	0.68	1.06	0.34	0.17
YoY			-0.4%	-23.3%	-11.2%	-8.9%	-47.2%	2.6%	7.7%	61.9%	55.9%	-67.9%	-50.0%
Solar cell(monocrystalline)	per W	0.39	0.32	0.33	0.22	0.21	0.13	0.12	0.12	0.15	0.18	0.06	0.04
YoY			-16.9%	3.1%	-33.3%	-4.5%	-38.1%	-7.7%	0.0%	25.0%	20.0%	-66.7%	-33.3%
Module(monocrystalline)	per W	0.68	0.61	0.55	0.39	0.35	0.23	0.25	0.21	0.26	0.27	0.14	0.10
YoY			-10.6%	-9.8%	-29.1%	-10.3%	-34.3%	8.7%	-16.0%	23.8%	3.8%	-48.1%	-28.6%

Source: Shared Research based on PVeye Market Data

Note: Figures reflect data as of December each year.

Costs of power generation facilities

The International Renewable Energy Agency provides data on installed costs of renewables-based power generation facilities across the world. According to the data, total installed costs and levelised cost of electricity (USD/kWh) declined the most for solar power facilities in the period from 2010 to 2022, indicating heightened cost advantage of solar power systems. Total

installed costs of solar power projects fell 86%, and levelized cost of electricity for solar fell 90%. The facility utilization rate was a low 16% in 2023, although up from 14% in 2010.

	Total installed costs(USD/kW)			Facility utilization rate(%)			Levelised cost of electricity(USD/kWh)		
	2010	2023	Rate of change	2010	2023	Rate of change	2010	2023	Rate of change
Biomass	3,010	2,730	-9%	72	72	0%	0.084	0.072	-14%
Geothermal	3,011	4,589	52%	87	82	-6%	0.054	0.071	31%
Hydroelectric	1,459	2,806	92%	44	53	20%	0.043	0.057	33%
Solar	5,310	758	-86%	14	16	14%	0.460	0.044	-90%
CSP	10,453	6,589	-37%	30	55	83%	0.393	0.117	-70%
Onshore wind	2,272	1,160	-49%	27	36	33%	0.111	0.033	-70%
Offshore wind	5,409	2,800	-48%	38	41	8%	0.203	0.075	-63%

Source: Shared Research based on the "Renewable Power Generation Costs in 2023" report issued by the International Renewable Energy Agency

Note: The weighted average is applied to both total installed costs and levelized cost of electricity

Trends over the past five years and the past decade both indicate a decline in total installed costs and levelised cost of electricity, year on year.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Five-year CAGR	10-year CAGR
Total installed costs(USD/kW)	2,749	2,090	1,901	1,644	1,405	1,161	1,019	950	908	758	-11.6%	-13.0%
Facility utilization rate(%)	16.6%	16.5%	16.7%	17.6%	17.9%	17.5%	16.1%	17.2%	16.9%	16.2%		
Levelised cost of electricity(USD/kWh)	0.177	0.132	0.116	0.091	0.077	0.067	0.060	0.052	0.050	0.044	-10.6%	-13.9%

Source: Shared Research based on the "Renewable Power Generation Costs in 2023" report issued by the International Renewable Energy Agency

Solar panel supply chain

The manufacturing processes of a solar panel constitute the production of polycrystalline silicon, ingots, wafers, solar cells, and modules (panels). By country, China leads in production capacity for each of these materials. According to IEA, China produced 79.4% of polycrystalline silicon, 96.8% of silicon wafers, 85.2% of solar cells, and 74.6% of solar modules manufactured in 2021. IEA forecasts that by 2027, these shares will remain largely unchanged, though China's share in materials excluding polycrystalline silicon is expected to decline slightly. Meanwhile, the production shares of the US and India are projected to increase, with both countries' capacities doubling compared to 2021. The US has been imposing tariffs on Chinese imports while providing substantial subsidies for domestic investment, and IEA expects production capacity for cells and wafers in the US to rise as a result.

Solar panel production capacity by country and region

Solar panel production capacity	Demand		Module		Solar cell		Wafer		Polycrystalline silicon	
	2021	2027	2021	2027	2021	2027	2021	2027	2021	2027
	Results	Forecast	Results	Forecast	Results	Forecast	Results	Forecast	Results	Forecast
China	36.5%	40.3%	74.6%	73.9%	85.2%	79.5%	96.8%	88.6%	79.4%	89.2%
North America	16.8%	16.9%	2.7%	5.8%	0.6%	3.5%	0.0%	3.6%	5.6%	3.0%
Europe	17.8%	18.2%	2.8%	2.0%	0.6%	0.7%	0.5%	0.2%	8.0%	2.4%
Asia Pacific	13.4%	8.1%	15.3%	10.7%	12.2%	9.9%	2.5%	2.8%	6.0%	2.0%
India	7.1%	8.5%	3.1%	6.8%	1.2%	6.3%	0.0%	4.7%	0.0%	3.1%
Other	8.5%	8.0%	1.4%	0.8%	0.2%	0.1%	0.1%	0.1%	1.1%	0.3%

Source: International Energy Agency "Will new PV manufacturing policies in the United States, India and the European Union create global PV supply diversification? (Dec 2022)

Solar power generation market in Japan

According to the Yano Research Institute, solar power generation capacity installed in Japan in FY2023 totaled 5,040MW (5.0GW). The decline in installed capacity, particularly in the commercial sector, was driven by the shrinking adoption of solar power systems under the Feed-in Tariff (FIT) scheme and a decline in electricity purchase prices. Meanwhile, installations under the Power Purchase Agreement (PPA) model, which does not rely on the FIT scheme, have been increasing. A PPA is a business model where a power producer installs and operates solar power systems for a specific consumer (who, in the case of on-site PPAs, provides the installation site) and sells electricity to the consumer at a fixed price over the long term. Since FY2021, PPA-based installations have been expanding. For power producers, PPAs offer the advantage of securing stable, long-term revenue, while for consumers, they eliminate the need for upfront spending and operational management while enabling them to secure a fixed-price, environmentally friendly power source.

According to the Yano Research Institute, the expansion of PPA-based installations is expected to offset the decline in FIT-based installations, bringing Japan's solar power generation capacity installed to 6,049MW in FY2030. The CAGR from FY2025 to FY2030 is projected to be 1.7%.

(MW)	FY03/21	FY03/22	FY03/23	FY03/24	FY03/25	FY03/26	FY03/27	FY03/28	FY03/29	FY03/30	FY03/31	CAGR5y
				Estimate	Estimate	Projection	Projection	Projection	Projection	Projection	Projection	26/3 - 31/3
Solar power generation installed	5,814	5,202	5,823	5,040	5,154	5,216	5,362	5,429	5,724	5,997	6,049	
YoY	2.5%	-10.5%	11.9%	-13.4%	2.3%	1.2%	2.8%	1.2%	5.4%	4.8%	0.9%	1.7%

Source: Yano Research Institute, Survey on the Solar Power Generation Market (2024) (August 30, 2024)

Competition

According to the IEA's "Trends in Photovoltaic Applications 2024," the module manufacturing capacity in 2023 was 1,103GW/year, up from 717GW/year in 2022. However, the actual production volume was 612GW/year (379GW/year in 2022), resulting in a utilization rate of around 55%. The top manufacturers by shipment volume were as follows: JinkoSolar Holding Co., Ltd. (NYSE JKS) with 83.5GW and a market share of 13.6%, LONGi Green Energy Technology Co., Ltd. (Shanghai 601012) with 72.8GW and a market share of 11.9%, JA Solar Technologies Co., Ltd. (Shenzhen 002459) with 60GW and a market share of 9.8%, Trina Solar Co., Ltd. (Shanghai 688599) with 58.9GW and a market share of 9.6%, and Canadian Solar Inc. (NASDAQ CSIQ) with 31.4GW and a market share of 5.1%. Collectively, these five companies accounted for 50.1% of the market. Among the top five companies, four are Chinese. Although Canadian Solar Inc. (NASDAQ CSIQ) is headquartered in Canada, it has major factories in China. Similarly, Hanwha Q CELLS Co., Ltd. (NASDAQ HQCL), a Korean company based in Germany, also operates factories in China. In Vietnam, there are four to five solar panel manufacturing companies, among which VSUN is one of the leading firms in terms of scale.

VSUN has expanded its annual solar panel manufacturing capacity to 4GW. Although the company does not disclose its annual sales volume, assuming full production, its market share would be approximately 0.7% of the global market, positioning it as one of the major manufacturers. Its main competitors include the aforementioned companies, but here, we consider JinkoSolar (China), Canadian Solar (Canada), and First Solar, Inc. (US; NASDAQ: FSLR) as VSUN's peer companies, primarily because they are comparable in terms of accounting standards.

JinkoSolar Holding Co., Ltd. (NYSE: JKS)

JinkoSolar, established in 2006 and headquartered in the Shangrao economic development zone (Jiangxi, China), is a solar product manufacturer ranking third globally by annual manufacturing capacity for solar panels. JinkoSolar initially focused on the production of wafers, but eventually began manufacturing panels. Since 2016, it has ranked among the top global panel manufacturers by cumulative shipment volume. JinkoSolar manufactures wafers, solar cells, and panels. At end-2023, its annual manufacturing capacity stood at 85GW for wafers, 90GW for solar cells, and 110GW for panels. JinkoSolar has 12 production bases in China, Vietnam, Malaysia, and a global sales network. It listed on NYSE in 2010, and in FY12/23, consolidated revenue was USD16.7bn, EBITDA was USD230mn, and net income attributable to owners of the parent was USD486mn. The employee count was 57,400.

Canadian Solar Inc. (NASDAQ: CSIQ)

Canadian Solar, established in 2001 and headquartered in British Columbia (Canada), ranks among the world's largest solar power project operators/solar product manufacturers. In addition to having a vertically integrated manufacturing system for solar cells, it also engineers, develops, and manufactures other products for solar power generation and energy storage. Canadian Solar operates globally, with particular focus on North America, South America, and Europe. At end-2023, its annual manufacturing capacity stood at 20GW for ingots, 21GW for wafers, 50GW for solar cells, and 57GW for solar modules. Production bases are located in China and Southeast Asia. It listed on NASDAQ in 2006, and in FY12/23, consolidated revenue was USD7.6bn, EBITDA was USD793mn, and net income attributable to owners of the parent was USD274mn. The employee count stood at 18,400.

First Solar, Inc. (NASDAQ: FSLR)

First Solar, established in 1999 and headquartered in Arizona, is a solar technology company. It manufactures and sells high-performance and low-carbon products. These include solar panels made of cadmium telluride-coated glass, which were developed in First Solar's US-based R&D lab applying its thin-film technology. The company seeks to manage the entire product lifecycle from procurement of raw materials to the recycling of used panels. At end-2023, its annual solar panel manufacturing capacity stood at 16.6GW. By creating production bases in the US, Malaysia, Vietnam, and India, First Solar has built a production system that does not rely on China's silicon supply chain. It listed on NASDAQ in 2006, and in FY12/23, consolidated revenue was USD3.3bn, EBITDA was USD1.2bn, and net income attributable to owners of the parent was USD831mn. The employee count was 6,700.

Production system and sales by region

Among the four companies, JinkoSolar boasts the largest total manufacturing production capacity at 285GW. Canadian Solar's production capacity is about half this figure, at 148GW, while First Solar's production capacity, at 16.6GW, is smaller compared to these two companies but exceeds VSUN's 12GW. All three other companies have increased their capacities from 2022 to 2023. JinkoSolar and Canadian Solar have built a vertically integrated production system from the upstream to downstream processes of manufacturing. The Abalance group handled only downstream panel production until FY06/23, but began cell production at a plant completed in late October 2023, and started ingot and wafer production in April 2024. While JinkoSolar and Canadian Solar have many factories in China, the VSUN group has located its panel, cell, and wafer plants in Vietnam, creating a supply chain that does not solely rely on China. First Solar produces solar panels using CdTe technology, which does not rely on Chinese components, and has established a supply chain outside of China, primarily in the US.

In terms of revenue by region, both Canadian Solar and JinkoSolar generate revenue globally, while 74% of First Solar's revenue comes from the US alone. In FY06/23, the company primarily focused on the US and European markets. However, with the US tariff exemption ending in June 2024, the US revenue share declined while revenue from Asia, including India, rose.

Annual production capacity of the four companies

Head office	Abalance		Canadian Solar		First Solar		JinkoSolar	
	Japan	Canada	US	China	2000	2001	1999	2001
Established								
Fiscal year	FY06/23	FY06/24	FY12/22	FY12/23	FY12/22	FY12/23	FY12/22	FY12/23
Annual production capacity(GW)								
Ingot	0.0	4.0	20.4	20.4	0.0	0.0	0.0	0.0
Wafer	0.0		20.0	21.0	0.0	0.0	65.0	85.0
Solar cell	0.0	4.0	19.8	50.0	0.0	0.0	55.0	90.0
Panel/Module	4.0	4.0	32.2	57.0	9.8	16.6	70.0	110.0
Total	4.0	12.0	92.4	148.4	9.8	16.6	190.0	285.0
Number of employees	1,430	1,684	13,535	18,423	5,500	6,700	46,511	57,397
Revenue composition by region								
North America	86.7%	68.8%	37.4%	34.4%			4.5%	8.8%
US	86.7%	65.1%	26.3%	19.5%	83.7%	74.0%		
Europe	4.9%	4.1%	25.9%	24.6%			23.6%	18.3%
France			0.4%	0.3%	2.6%	3.7%		
China			25.5%	28.3%			41.9%	38.3%
Asia(excl. China)	4.5%	26.9%	11.2%	12.8%			13.6%	16.4%
Japan	4.0%	4.3%	4.4%	7.8%	1.8%	6.3%		
India			2.6%	1.2%	1.4%	3.2%		

Source: Shared Research based on company data

Notes: Abalance annual production capacity figures include those of VSUN and TOYO SOLAR. The number of employees and revenue by region are Abalance figures.

Profits and financial standing

In FY06/24, the company's ROE was 52.4% (down slightly from 53.8% in FY06/23), while ROA increased to 16.9% (from 12.3%). Although direct comparison is challenging due to differing fiscal year-end dates among the three competitors, the company's ROE and ROA exceeded those of the competitors. Additionally, the company's net profit margin was the second highest, after First Solar. Up until FY06/22, the company's profitability lagged behind its competitors, but by FY06/24, it had reached a comparable level across various financial metrics. Shared Research attributes this improvement to the company's business expansion and its shift to in-house production of wafers and cells, which increased the capture of added value. However, the company's equity ratio, while rising to 15.8% from 8.8% in FY06/23, still remains below that of its competitors. The company's high ROE is partly due to its higher leverage.

(JPYmn)	Abalance		Canadian Solar		First Solar		JinkoSolar	
Fiscal year	FY06/23	FY06/24	FY12/22	FY12/23	FY12/22	FY12/23	FY12/22	FY12/23
Accounting standard	JPGAAP	JPGAAP	USGAAP	USGAAP	USGAAP	USGAAP	USGAAP	USGAAP
Revenue	215,284	208,972	998,553	1,087,454	350,203	473,996	1,611,396	2,387,479
YoY	133.7%	-2.9%	63.1%	8.9%	3.3%	35.3%	116.8%	48.2%
Cost of revenue	185,663	164,398	829,672	904,634	340,863	288,220	1,373,385	2,004,294
YoY	125.0%	-11.5%	63.7%	9.0%	33.9%	-15.4%	120.8%	45.9%
Cost of revenue ratio	86.2%	78.7%	83.1%	83.2%	97.3%	60.8%	85.2%	84.0%
Gross profit	29,621	44,573	168,881	182,820	9,340	185,776	238,011	383,185
YoY	208.1%	50.5%	60.1%	8.3%	-89.0%	1889.0%	96.4%	61.0%
GPM	13.8%	21.3%	16.9%	16.8%	2.7%	39.2%	14.8%	16.0%
SG&A expenses	16,816	21,224	121,276	118,072	46,876	64,316	229,690	260,618
YoY	110.0%	26.2%	45.4%	-2.6%	39.1%	37.2%	127.1%	13.5%
SG&A ratio	7.8%	10.2%	12.1%	10.9%	13.4%	13.6%	14.3%	10.9%
Net income	4,965	9,530	32,084	39,162	-5,905	118,660	12,028	69,353
YoY	516.0%	91.9%	190.3%	22.1%	-110.9%	-2109.5%	-8.4%	476.6%
Net margin	2.3%	4.6%	3.2%	3.6%	-1.7%	25.0%	0.7%	2.9%
ROE(Net income)	53.8%	52.4%	12.4%	10.7%	-0.8%	12.4%	3.8%	10.3%
ROA (Net income)	12.3%	16.9%	2.7%	2.3%	-0.5%	8.0%	0.6%	2.5%

Source: Shared Research based on company data

Notes: Financial statements for the three companies (Canadian Solar, First Solar, and JinkoSolar) are denominated in USD and converted into JPY using the exchange rate as of December 31 (end-December 2022: JPY133.7; end-December 2023: JPY142.8)

ROE and ROA are based on comparable net income for accounting purposes

(JPYmn)	Abalance		Canadian Solar		First Solar		JinkoSolar	
Fiscal year	FY06/23	FY06/24	FY12/22	FY12/23	FY12/22	FY12/23	FY12/22	FY12/23
Accounting standard	JPGAAP	JPGAAP	USGAAP	USGAAP	USGAAP	USGAAP	USGAAP	USGAAP
Total assets	143,691	150,173	1,208,264	1,699,071	1,103,189	1,480,452	2,106,382	2,732,554
Shareholders' equity(excl. stock acquisition rights and non-controlling interests)	12,596	23,800	259,597	365,537	780,281	955,171	316,692	674,613
YoY	114.5%	88.9%	24.2%	40.8%	12.9%	22.4%	57.4%	113.0%
Equity ratio	8.8%	15.8%	21.5%	21.5%	70.7%	64.5%	15.0%	24.7%
Operating cash flows	18,526	44,757	122,554	97,784	116,769	86,021	-112,446	278,143
Investing cash flows	-20,670	-21,191	-84,296	-238,728	-159,447	-67,529	-237,896	-304,970
Financing cash flows	17,235	-5,446	-83,845	-159,464	-120,812	-198,073	388,061	173,831

Source: Shared Research based on company data

Note: Financial statements for the three companies (Canadian Solar, First Solar, and JinkoSolar) are denominated in USD and converted into JPY using the exchange rate as of December 31 (end-December 2022: JPY133.7; end-December 2023: JPY142.8)

Strengths and weaknesses

Strengths

Establishing unique differentiation by expanding solar panel production capacity in Vietnam, rather than China

Abalance explains that it made a foray into Vietnam because of its inexpensive, hard-working labor force and relatively stable political system. Shared Research believes the company sought to capitalize on demand for solar panels free from US import restrictions and tariffs amid prolonged US–China trade frictions. After becoming a consolidated subsidiary, VSUN has expanded its solar panel production capacity, making it the top-selling Japanese brand and company in the market. A state-of-the-art cell factory began operations at TOYO SOLAR in Vietnam in October 2023, and from April 2024, ingot and wafer factories have also been operational at VSUN.

According to the IEA, in terms of solar panel production by country, China led in 2021 with 74.7%, followed by Vietnam with 6.8%, Malaysia with 3.7%, South Korea with 3.3%, and the United States with 2.7% of overall production. VSUN's main competitors are major solar panel manufacturers operating worldwide, mostly large Chinese companies. Similar to VSUN, companies such as First Solar in the US have a set production scale and are limited to producing solar production panels outside of China. Abalance group procures raw materials from Europe, the US, and Asia, manufactures solar panels in Vietnam, and exports them mainly to the US and Europe. Prolonged trade frictions between the US and China, as well as Russia's war in Ukraine, have led to supply chain revisions, and demand for solar panels from non-Chinese sources is increasing in the US and other countries. The company group has manufacturing capacity for panels, cells, ingots, and wafers in Vietnam, establishing a unique competitive advantage.

With the addition of manufacturing functions for ingots, wafers, and cells, key upstream processes in solar panel production, the company has formed a global supply chain and established the Japan brand, providing end-to-end services in Japan that no other peers can match

The Abalance group conducts solar power plant trades, sells goods associated with solar power generation, and offers a full range of services from the planning phase of solar power projects to engineering, development, and construction of the facility, operation and maintenance, and even recycling. Receiving a contract that spans the entire lifecycle of a facility allows the company to provide seamless, speedy, and efficient services. The company also offers customers support in areas such as contracts with power utilities, confirmation of laws and regulations with the local government, explanation to local residents, and paperwork necessary to obtain loans from financial institutions. In addition, recurring revenue businesses generate stable cash flow via income from electricity sales revenue.

Abalance made VSUN a consolidated subsidiary in December 2020, bringing the manufacture of Japan brand solar panels in-house, forming a global supply chain and enabling the company to provide end-to-end services that no other domestic companies can match. By late October 2023, the cell plant of TOYO SOLAR began operations, and in April 2024, the ingot and wafer plant of VSUN became operational, further strengthening Abalance's overarching services. Looking ahead, the company plans to build a cell plant in Ethiopia and a panel and cell plant in the US, demonstrating its proactive efforts to strengthen its supply chain.

VSUN is well recognized by third-party organizations and major purchasers for its sustainable procurement practices and its solar panel quality, which bears comparison with major manufacturers

Chinese companies dominate the top positions in the global solar panel manufacturer rankings by annual production volume. Meanwhile, VSUN ranks around 20th with an annual production capacity of 4GW. According to a Shared Research estimate, roughly 60% of world's production capacity is shared by some 15 companies, while numerous small and medium-sized manufacturers make up the remaining 40%.

VSUN has gained the recognition of third-party organizations and major buyers not only for the reliable quality and performance of its products, but also for its procurement practices. In the first half of 2024, VSUN received a "Tier 1" grade certification from Bloomberg NEF, a US-based rating agency, for its bankability and financial stability. VSUN has been recognized as a "Top Performer" in the PV Module Reliability Scorecard (released by US-based PV Evolution Labs [PVEL]) since 2021, becoming one of the few manufacturers to receive this accolade. Further, in an assessment conducted by EcoVadis, a global rating agency based in France that assesses companies' sustainable procurement practices (including their responses to human rights violations in China), VSUN has received the Bronze Medal since 2021.

Weaknesses

Solar panels and cells, the company group's main products, are susceptible to demand/supply and price fluctuations due to policy changes by various governments. In response, VSUN has focused on producing panels and internalizing component manufacturing in Vietnam, while TOYO plans to establish panel production in the US to reduce policy-related risks.

Solar panels play a crucial role in the transition to a decarbonized society. While governments around the world provide incentives for early adoption of solar power generation, they also tend to impose tariffs on imported goods to protect their economies. The US, a key market for the Abalance group, has set a goal to achieve net-zero greenhouse gas emissions by 2050. This objective necessitates a substantial number of solar panels, creating robust demand. However, solar panel production predominantly takes place in China, which has led to trade tensions between the US and China.

The US has intensified its protectionist stance on products related to solar panels, implementing strict tariffs such as AD, CVD, and safeguard measures on imports from China. Nonetheless, to meet its robust domestic demand, the US temporarily lifted tariffs on imports from four Southeast Asian countries, including Vietnam, for two years from June 2022 (ended in June 2024). With the Inflation Reduction Act (IRA) enhancing domestic production capacity, the US government not only ended

the exemption as planned but also launched AD and CVD investigations into imports from the four Southeast Asian countries, leading to a preliminary decision to impose these duties.

In light of this situation, VSUN is avoiding shipments to the US after June 2024 while strengthening sales to Europe and Asia. To mitigate policy-related risks, TOYO has decided to construct a cell production plant in Ethiopia and plans to manufacture panels in the US.

The company's solar panel and cell production scale is still small compared to major manufacturers. Moving forward, in addition to expanding panel and cell manufacturing capacity, the company is strengthening its global supply chain, including the commencement of operations at the ingot and wafer plant (annual production capacity of 4GW) in April 2024.

VSUN's main competitors are major solar panel manufacturers, particularly those in China. LONGi Green Energy Technology tops the market with an annual manufacturing capacity of 120GW, and JinkoSolar has a 110GW annual manufacturing capacity. In contrast, the annual production capacity of VSUN's solar panel plants is around 4GW, only about 5% compared to those of the major companies. Large manufacturers are involved in the upstream processes as well, manufacturing wafers and solar cells alongside solar panels. Much like VSUN, First Solar also manufactures panels outside China; its annual production capacity is 16.6GW. TOYO SOLAR also began manufacturing cells in late October 2023 and wafers in April 2024, but with an annual manufacturing capacity of 4GW each, the scale of production is still small compared to the major players.

The company needs to strengthen its financial soundness to sustain high investment levels. Its equity ratio improved from 15.8% in FY06/24 to 17.0% at end-Q2 FY03/25, and it aims to continue enhancing this ratio through the accumulation of retained earnings.

The company has steadily expanded its capacity, with solar panel, ingot and cell, and wafer factories each having an annual production capacity of 4GW. It plans to establish a 2GW cell factory in Ethiopia (transferring capacity from Vietnam) and a 2.5GW solar panel factory in the US. It intends to continue making high-level investments. VSUN has been financing investments to date with loans it secured from a major domestic financial institution in Vietnam. To maintain bank loans amid ongoing high levels of investment, the group as a whole must maintain financial soundness.

Although the company has conducted capital increases, investments have been mostly funded by bank borrowings, resulting in expanded interest-bearing debt and the equity ratio falling to 6.9% at end-FY06/22. Through capital increases and profit accumulation, the equity ratio improved to 8.8% at end-FY06/23 and further to 15.8% by end-FY06/24. Additionally, in July 2024, the company listed TOYO, the parent of TOYO SOLAR, on NASDAQ, raising approximately USD6.0mn. Despite these improvements, with continued high levels of investment, further strengthening of financial stability is necessary.

The company plans to explore additional funding options to support future investments in the US. At the same time, it aims to strengthen its equity base by accumulating retained earnings through the growth of its Solar Panel Manufacturing and Green Energy businesses.

Financial statements

Income statement

Income statement	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Revenue	4,396	4,540	6,495	7,301	5,985	6,678	26,901	92,122	215,284	208,972
YoY	31.4%	3.3%	43.1%	12.4%	-18.0%	11.6%	302.8%	242.4%	133.7%	-2.9%
Cost of revenue	3,315	3,432	5,006	5,123	4,112	4,916	22,112	82,508	185,663	164,398
YoY	27.1%	3.5%	45.9%	2.3%	-19.7%	19.6%	349.8%	273.1%	125.0%	-11.5%
Cost ratio	75.4%	75.6%	77.1%	70.2%	68.7%	73.6%	82.2%	89.6%	86.2%	78.7%
Gross profit	1,081	1,108	1,489	2,178	1,873	1,762	4,788	9,613	29,621	44,573
YoY	46.5%	2.5%	34.4%	46.3%	-14.0%	-5.9%	171.7%	100.8%	208.1%	50.5%
Gross profit margin	24.6%	24.4%	22.9%	29.8%	31.3%	26.4%	17.8%	10.4%	13.8%	21.3%
SG&A expenses	660	710	1,374	1,251	1,265	1,400	3,427	8,007	16,816	21,224
YoY	39.3%	7.6%	93.3%	-8.9%	1.1%	10.7%	144.7%	133.6%	110.0%	26.2%
SG&A ratio	15.0%	15.6%	21.1%	17.1%	21.1%	21.0%	12.7%	8.7%	7.8%	10.2%
Operating profit	420	397	115	927	608	362	1,361	1,605	12,804	23,349
YoY	59.5%	-5.5%	-71.0%	704.7%	-34.4%	-40.5%	276.4%	17.9%	697.8%	82.4%
Operating profit margin	9.6%	8.8%	1.8%	12.7%	10.2%	5.4%	5.1%	1.7%	5.9%	11.2%
Non-operating income/expenses	-81	29	-67	-52	-42	-56	-92	-187	1,234	1,545
Non-operating income	1	47	39	34	64	112	376	769	2,953	4,441
Non-operating expenses	82	17	106	86	106	169	468	956	1,719	2,896
Recurring profit	339	427	49	874	566	306	1,269	1,418	14,038	24,894
YoY	40.9%	25.8%	-88.6%	1700.1%	-35.2%	-46.0%	315.3%	11.7%	890.0%	77.3%
Recurring profit margin	7.7%	9.4%	0.7%	12.0%	9.5%	4.6%	4.7%	1.5%	6.5%	11.9%
Extraordinary gains/losses	28	-39	1	42	15	-1	-15	750	-47	-615
Extraordinary gains	28	3	1	74	15	12	1	1,022	339	47
Extraordinary losses		41		32	0	12	16	272	386	662
Net income	200	228	-164	761	327	217	931	1,557	11,928	20,203
YoY	-14.8%	14.3%	-	-	-57.0%	-33.7%	330.0%	67.2%	666.1%	69.4%
Net margin	4.5%	5.0%	-	10.4%	5.5%	3.2%	3.5%	1.7%	5.5%	9.7%
Net income attributable to owners of the parent	200	231	-176	757	316	211	537	806	4,965	9,530
YoY	-14.6%	15.8%	-	-	-58.2%	-33.1%	154.2%	50.1%	516.0%	91.9%
Net margin	4.5%	5.1%	-	10.4%	5.3%	3.2%	2.0%	0.9%	2.3%	4.6%

Source: Shared Research based on company data

Note: Any differences between figures in the table and those in company data are due to rounding

- ▶ The company adopted the Accounting Standard for Revenue Recognition from the beginning of FY06/22. Accordingly, it recognizes revenue at the transfer of promised goods and services to its customers, in an amount reflecting the consideration to which it expects to be entitled in exchange for those goods or services.
- ▶ The company adopted the Accounting Standard for Fair Value Measurement from the beginning of FY06/22. It says there is no impact of this change on its financial statements.

Balance sheet

Balance sheet	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Cash and deposits	407	496	672	601	799	1,209	4,722	3,966	20,619	37,740
Notes and accounts receivable	525	473	335	335	393	303	1,312	6,156	2,011	3,558
Merchandise and finished goods	263	385	423	327	172	246	6,480	26,740	48,827	13,232
Real estate for sale	333	118	73	44	414	1,536	365	768	452	1,350
Work in process	336	666	2,637	3,659	3,631	4,751	4,462	3,804	4,335	4,891
Allowance for doubtful accounts	-10	-22	-204	-219	-1	0	-1	-109	-36	-46
Total current assets	2,093	2,420	4,692	5,227	6,078	8,553	22,537	57,450	100,049	89,197
YoY	22.0%	15.6%	93.9%	11.4%	16.3%	40.7%	163.5%	154.9%	74.1%	-10.8%
% of assets	82.7%	86.7%	73.3%	72.7%	55.3%	57.9%	57.2%	67.5%	69.6%	59.4%
Buildings and structures	11	11	29	39	116	116	427	569	1,143	4,108
Accumulated depreciation	-6	-8	-14	-20	-53	-59	-120	-191	-356	-528
Buildings and structures (net)	5	4	15	19	62	58	306	378	786	3,580
Machinery, equipment, and vehicles	52	51	848	970	2,172	2,649	13,626	19,431	27,463	49,659
Accumulated depreciation	-23	-31	-154	-250	-369	-528	-1,492	-3,080	-5,901	-11,096
Machinery, equipment, and vehicles (net)	29	19	694	720	1,803	2,122	12,133	16,351	21,562	38,563
Land	114	148	472	707	1,033	1,133	1,332	1,791	2,403	2,542
Construction in progress					1,330	2,211	1,331	1,757	7,823	3,391
Total tangible fixed assets	189	223	1,222	1,456	4,239	5,529	15,201	20,507	32,943	49,304
YoY	17.5%	17.7%	448.6%	19.1%	191.0%	30.4%	174.9%	34.9%	60.6%	49.7%
% of assets	7.5%	8.0%	19.1%	20.3%	38.6%	37.4%	38.6%	24.1%	22.9%	32.8%
Total intangible assets	61	5	290	217	195	110	365	4,688	7,523	6,404
YoY	-24.5%	-91.3%	5361.3%	-25.3%	-9.9%	-43.7%	231.8%	1184.4%	60.5%	-14.9%
% of assets	2.4%	0.2%	4.5%	3.0%	1.8%	0.7%	0.9%	5.5%	5.2%	4.3%
Investments and other assets	188	142	195	289	459	554	1,268	2,463	3,134	5,266
YoY	62.9%	-24.0%	36.6%	48.4%	59.1%	20.6%	128.9%	94.2%	27.2%	68.0%
% of assets	7.4%	5.1%	3.0%	4.0%	4.2%	3.8%	3.2%	2.9%	2.2%	3.5%
Total fixed assets	438	371	1,707	1,962	4,893	6,193	16,835	27,659	43,600	60,975
YoY	22.6%	-15.4%	360.7%	14.9%	149.4%	26.6%	171.8%	64.3%	57.6%	39.9%
% of assets	17.3%	13.3%	26.7%	27.3%	44.5%	41.9%	42.7%	32.5%	30.3%	40.6%
Total deferred assets					14	17	16	10	42	1
Total assets	2,531	2,790	6,400	7,189	10,985	14,765	39,388	85,121	143,691	150,173
YoY	22.1%	10.2%	129.4%	12.3%	52.8%	34.4%	166.8%	116.1%	68.8%	4.5%
Liabilities										

Accounts payable	436	529	331	411	533	991	5,058	14,595	16,412	12,252
Short-term borrowings	194	410	1,027	1,270	1,147	699	6,499	18,356	35,031	28,753
Current portion of long-term borrowings	122	51	697	800	967	1,071	869	1,266	3,070	2,853
Contract liabilities								16,255	27,843	8,635
Current portion of long-term accounts payable					75	1,582	2,384	464	460	793
Total current liabilities	1,127	1,368	3,545	3,873	4,641	6,745	26,212	57,721	100,356	83,261
Bonds					100	36	116	50	166	66
Long-term borrowings	269	92	1,467	1,139	1,679	3,594	6,105	12,032	13,199	12,703
Lease obligations	14	32	25	13	8	0	79	10	483	513
Long-term accounts payable					1,342	1,966	1,828	7,028	6,267	10,144
Total fixed liabilities	361	203	1,733	1,499	4,312	5,859	8,398	19,452	20,563	24,479
Total liabilities	1,488	1,571	5,279	5,373	8,953	12,605	34,611	77,174	120,920	107,741
YoY	23.3%	5.6%	236.0%	1.8%	66.6%	40.8%	174.6%	123.0%	56.7%	-10.9%
% of assets	58.8%	56.3%	82.5%	74.7%	81.5%	85.4%	87.9%	90.7%	84.2%	71.7%
Net assets										
Shareholders' equity										
Capital stock	656	656	701	701	701	702	825	1,243	2,059	2,518
Capital surplus			45	45	45	47	229	647	1,413	2,195
Retained earnings	383	564	333	1,022	1,245	1,368	2,919	3,629	8,486	17,800
Treasury stock	0	0	-1	-1	-21	-21	-21	-22	-143	-144
Total shareholders' equity	1,038	1,219	1,077	1,767	1,969	2,096	3,953	5,497	11,815	22,369
Share subscription rights	1			2	5	3	13	135	266	305
Non-controlling interests	3		43	47	58	63	758	1,939	9,909	18,327
Total net assets	1,043	1,219	1,121	1,816	2,032	2,159	4,777	7,947	22,771	42,432
YoY	20.4%	16.9%	-8.1%	62.0%	11.9%	6.2%	121.3%	66.4%	186.5%	86.3%
% of assets	41.2%	43.7%	17.5%	25.3%	18.5%	14.6%	12.1%	9.3%	15.8%	28.3%

Source: Shared Research based on company data

Cash flow statement

Cash flow statement (JPYmn)	FY06/15	FY06/16	FY06/17	FY06/18	FY06/19	FY06/20	FY06/21	FY06/22	FY06/23	FY06/24
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Cash flows from operating activities										
Pre-tax profit	367	388	84	917	581	304	1,255	2,168	13,990	24,278
Depreciation	47	34	54	123	167	188	708	1,457	1,917	4,677
Amortization of goodwill	17	17		101	107	77	12	147	375	139
Impairment losses		35		28					237	401
Interest expenses	14	11	18	44	85	111	317	740	1,473	2,050
Equity in earnings of affiliates ()	18	0	13	8	-2	-27	-19	-26	-425	-94
Foreign exchange gains and losses()	-4	1	0	-5	0	2	-139	49	-1,601	758
Change in trade receivables	-117	52	138	-1	-214	113	-2,419	-11,424	4,294	-1,441
Change in inventories()	14	-451	221	-927	-956	-1,270	-3,399	-16,745	-20,712	33,361
Change in trade payables	-78	93	-732	79	120	378	3,569	19,793	1,058	-4,498
Change in advances received	71	62	-583	-16	671	63	-197	-1,238	10,176	-19,113
Other				320	283	664	-174	292	7,283	-7,500
Subtotal	139	323	-837	641	391	-647	-240	-4,810	20,867	49,317
Interest and dividends income received	0	1	1	0	1	0	29	117	102	464
Interests paid	-14	-12	-17	-44	-85	-114	-298	-754	-1,508	-2,033
Income taxes paid	-68	-106	-131	-265	-453	-101	-160	-1,002	-1,062	-3,419
Cash flows from operating activities (1)	57	206	-984	405	-147	-861	-608	-6,449	18,526	44,757
Cash flows from investing activities										
Payments into time deposits		-119	-26	-141	-92	-401	-114	-331	-285	-99
Proceeds from withdrawal of time deposits		75	23		41	140	113	96	139	587
Purchase of tangible fixed assets	-141	-55	-428	-377	-1,473	-117	-2,732	-6,036	-12,400	-9,656
Purchase of intangible assets	-10	-5	-14	-31	-7	-11	-10	-12	-2,198	-1,157
Deposits paid								-787	-5,539	-10,914
Purchase of subsidiaries' shares affecting scope of consolidation			-405		-21			-3,992	-1,450	-99
Loan advances	-92	-105	-12	-44	-154		-431	-980	-124	-2
Proceeds from collection of loans receivable	8	131	12	43	38		10	27	113	13
Other		-1			-7	-9	-3	-63	-17	29
Cash flows from investing activities (2)	-252	-75	-864	-559	-1,620	-472	-1,391	-13,221	-20,670	-21,191
Free cash flow (1+2)	-195	131	-1,848	-155	-1,766	-1,333	-1,999	-19,670	-2,144	23,566
Cash flows from financing activities		-32	1,983	17	510	1,996	5,176	14,000	16,506	-9,484
Repayments of installment payables					-62	-403	-189	-328	-765	-793
Proceeds from short-term borrowings	816	1,244	1,508	1,713	2,033	1,979	13,812	46,519	70,923	65,378
Repayments of short-term borrowings	-659	-1,028	-891	-1,471	-1,792	-2,130	-10,823	-36,222	-55,275	-72,327
Proceeds from long-term borrowings	110	70	1,600	671	1,289	3,546	3,625	7,623	5,544	2,455
Repayments of long-term borrowings	-114	-317	-235	-896	-1,019	-1,399	-1,438	-3,920	-4,686	-4,990
Proceeds from issuance of shares			90				224	775	1,399	862
Dividends paid	-25	-50	-55	-67	-86	-87	-89	-98	-117	-138
Cash flows from financing activities	104	-85	1,991	-62	1,913	1,465	5,290	17,752	17,235	-5,446
Depreciation and amortization (A)	47	34	54	123	274	265	720	1,604	2,292	4,816
Purchase of tangible fixed assets and intangible assets(B)	-151	-60	-442	-408	-1,480	-128	-2,742	-6,048	-14,598	-10,813
Change in working capital (C)	181	307	2,069	847	-246	648	2,889	14,912	16,654	-27,169
Simple FCF (NI + A + B - C)	-85	-101	-2,633	-374	-644	-300	-4,374	-18,550	-23,995	30,702

Source: Shared Research based on company data

Note: Only main accounting items are listed

News and topics

Construction of a new plant in the US by a subsidiary (through the acquisition of a second-tier subsidiary)

2024-11-25

Abalance Corporation announced the construction of a new plant in the US by a subsidiary (through the acquisition of a second-tier subsidiary).

Overview

Abalance has decided to construct a new plant in the US through consolidated subsidiary TOYO Solar LLC ("TOYO LLC"). TOYO LLC is a consolidated subsidiary of TOYO Co., Ltd. ("TOYO"), a company listed on the NASDAQ stock exchange in the US. Specifically, under a partnership agreement expected to be concluded with Solar Plus Technology Inc. ("Solar Plus"), a US-based solar panel company, TOYO LLC plans to acquire 100% of the membership interests in Solar Plus Technology Texas LLC ("Texas LLC"), owned by Solar Plus. As part of the acquisition, TOYO Holdings LLC, which owns 100% of TOYO LLC's membership interests, will transfer 24.99% of its interests to Solar Plus. Following this transaction, Texas LLC will become a second-tier subsidiary of Abalance, with Abalance's ownership stake in both TOYO LLC and Texas LLC expected to be 34.10%. After finalizing the agreement, the group will prepare to commence production at the new solar panel plant and focus on establishing a business foundation in the US market.

Reasons for constructing new plant and concluding the partnership agreement

The group has been exploring the establishment of a new production base for solar panels and cells in the US to address the medium- to long-term growth potential of the US solar power market. Texas LLC has been making preparations to manufacture solar panels near Houston, Texas. It has already signed lease agreements for the land and building of the factory, and equipment installation preparations are underway. The acquisition of Texas LLC by TOYO LLC enables TOYO to shorten the time required to commence solar panel production in the US. Going forward, TOYO plans to solidify its manufacturing plans for the new facility. Abalance regards this initiative as a key project for building a domestic supply chain for solar panel manufacturing in the US and enhancing the group's long-term corporate value. TOYO targets the start of solar panel production at the factory by mid-2025, with an annual production capacity of 2.5GW expected to be achieved by the end of the same year. It plans to source the solar cells required for production from its Ethiopian factory.

Overview of the new solar panel plant in the US

- Location: 6115 Greens Road, Humble, Texas 77396, USA
- Site area: 567,140 square feet
- Production capacity and planned investment amount:
 - Phase 1: 1GW, USD30mn (approx. JPY4.5bn), Start of operations: Mid-2025
 - Phase 2: 1.5GW, USD60mn (approx. JPY9bn), Start of operations: Late 2025
 - Total: 2.5GW, USD90mn (approx. JPY13.5bn)
 - Notes: Exchange rate: JPY150/USD. The land and building are leased, and the investment amount covers manufacturing and auxiliary equipment. The company plans to increase the production capacity to 6.5GW by 2029.
- Planned funding source: Group's own funds and other financing methods under consideration.
- Business operations: Manufacturing and sales of solar panels.

Outlook

The company expects this matter to have a minimal impact on its earnings for FY03/25.

Construction of new plant by subsidiary TOYO Co., Ltd.

2024-10-15

Abalance Corporation announced the construction of a new plant by subsidiary TOYO Co., Ltd. (hereinafter referred to as "TOYO").

Reason for the construction of a new plant

Consolidated subsidiary TOYO has been monitoring market trends and policy developments, including tax regulations, in the US, in addition to Vietnam, its main operational base. At the same time, it has been exploring the establishment of a new production base for solar panels and cells to strengthen its global supply chain. As a result, the group has decided to construct a new plant for solar cell production—the upstream process of solar panel manufacturing—in the Federal Democratic Republic of Ethiopia. The plans to establish a production base in the US remain unchanged.

Overview of the new plant construction

- Location: Hawassa, Sidama Region, Federal Democratic Republic of Ethiopia
- Land area: 31,500sqm
- Investment amount: USD60mn (approximately JPY9.0bn; the land and buildings will be leased, and the investment covers manufacturing and auxiliary equipment)
- Funding source: Self-financing
- Business operations: Manufacturing and sales of solar cells
- Production capacity: 2GW
- Number of employees: Approximately 880
- Construction start: Scheduled for mid-November 2024
- Completion: Expected around March 2025

Outlook

The company expects this matter to have a minimal impact on its earnings for FY03/25.

Subsidiary TOYO was listed on the US Nasdaq market

2024-07-03

Abalance Corporation announced that subsidiary TOYO Co., Ltd. (hereinafter referred to as TOYO) was listed on the US Nasdaq market on July 2, 2024 (Eastern Time).

This listing is by TOYO, the parent company of Vietnam Sunergy Cell Company Limited (currently, TOYO SOLAR Company Limited), a manufacturer and distributor of solar cells. Essentially, this means the operating company TOYO SOLAR has gone public.

Overview of TOYO

Name: TOYO Co., Ltd.

Representative: Ryu Junsei

Subsidiary name and business: Vietnam Sunergy Cell Company Limited (100% subsidiary), manufacturing and selling solar panel cells.

Listing Market: Nasdaq (USA)

Ticker symbol: TOYO

Offering Price: USD10.00 per share

Amount Raised: Approximately USD6.0mn

Outlook

The company notes that the listing will impact its consolidated financial statements, including the consolidated balance sheet and consolidated income statement. However, detailed figures are currently under review.

Planned appointment of new representative director

2024-06-24

Abalance Corporation announced the planned appointment of a new representative director.

Change in representative director (effective September 26, 2024)

Name	New position	Former position
Yasuaki Mitsuyuki	Vice chairman	President, representative director
Ryusuke Okada	President, representative director	(newly appointed)

Insider trading by former executive officer

2024-05-16

Abalance Corporation has announced insider trading by a former executive officer.

On May 16, 2024, it was reported that a former executive officer of the company was arrested on suspicion of violating the Financial Instruments and Exchange Act (insider trading). During the investigation by the authorities, no involvement of any current or other former officers or employees of the company in this matter has been found.

Revision to full-year FY06/24 earnings forecast

2024-05-15

Abalance Corporation announced a revision to its full-year FY06/24 earnings forecast.

Revised full-year FY06/24 forecast

- Revenue JPY185.0bn (previous forecast: JPY251.8bn)
- Operating profit: JPY20.6bn (JPY15.8bn)
- Recurring profit: JPY20.6bn (JPY15.8bn)
- Net income attributable to owners of the parent: JPY8.0bn (JPY7.0bn)

Reason for the revision

The company expects revenue to fall short of the previous forecast due to a decline in panel market prices caused by a weakening supply-demand balance in the global solar panel market. On the other hand, it anticipates that productivity improvements attributed to in-house cell production among other factors, will contribute to improved profit margins, leading to higher-than-previously-forecast profits from the operating level down.

Issuance of new shares through third-party allotment

2024-04-26

Abalance Corporation has announced the issuance of new shares through a third-party allotment.

Abalance Corporation has resolved to issue new shares through a third-party allotment to raise funds for investment in its solar power generation business. The shares will be allocated to the Athos Asia Event Driven Master Fund.

In the third-party allotment, Abalance Corporation will issue 440,000 shares with 4,400 voting rights attached. These shares will represent 2.51% of the total issued shares (17,477,433 shares) as of March 31, 2024, and 2.53% of the total voting rights (173,705 units).

The company's equity ratio improved from 8.8% at the end of June 2023 to 10.6% by the end of December 2023. To achieve the target equity ratio of 20% by FY06/26, it is essential to bolster capital and grow retained earnings via the expansion of domestic operations. Consequently, the company has determined that raising funds through a third-party allotment is an effective strategy to enhance its financial position and secure the necessary funds, thereby contributing to the improvement of shareholder value through business growth.

Funds to be raised

- Total amount to be paid: JPY863mn
- Estimated issuance costs: JPY55mn
- Estimated net proceeds: JPY808mn

Use of proceeds

- ▶ Development and acquisition of solar power plants: JPY808mn

- ▶ Grid battery business in Hokkaido: JPY608mn
- ▶ Acquisition of shares of a power plant in Hiroshima Prefecture: JPY100mn
- ▶ Acquisition of a power plant in Okayama Prefecture: JPY100mn

Overview of issuance of new shares

Type and number of shares offered	Common shares of the company: 440,000 shares
Amount to be paid per share	JPY1,961.1 per share
Total amount to be paid	JPY863mn
Increase in capital and capital reserves	Capital stock: JPY43mn Capital reserves: JPY431mn
Payment date	May 13, 2024
Method of offering	Third-party allotment
Allottee and number of shares	Athos Asia Event Driven Master Fund, 440,000 shares

Source: Shared Research based on company data

Other information

History

<History>	
April 2000	Established Real Communications Co., Ltd.
August 2000	Moved head office to Chiyoda-ku, Tokyo
February 2001	Changed company name to Realcom Co., Ltd.
February 2005	Moved head office to Taito-ku, Tokyo
February 2006	Established US subsidiary Realcom Technology, Inc. for sales and support services in the US and planning and development of next-generation productsTechnology, Inc.
September 2007	Listed on the Mothers Market of the Tokyo Stock Exchange (TSE)
March 2008	Established US subsidiary Realcom U.S., Inc.
November 2011	Made WWB Corporation a wholly owned subsidiary via stock exchange
September 2012	Moved head office to Shinagawa-ku, Tokyo
March 2017	WWB Corporation established an SPC (WW LLC) and made Valors Corporation a subsidiary
March 2017	Changed company name to Abalance Corporation
February 2018	WWB Corporation established Fuji Solar Corporation
November 2018	Switched listing from the Mothers Market to the Second Section of TSE
October 2019	Established Abit Corporation through an incorporation-type split of the IT division
December 2020	Made Vietnam Sunergy Joint Stock Company (VSUN) a subsidiary
June 2021	WWB Corporation established Birdy Fuel Cells LLC
October 2021	WWB Corporation made Campanio Solar Co., Ltd. a subsidiary via second-tier subsidiary, Valors Corporation
October 2021	WWB Corporation made Japan Solar Power Co., Ltd. a subsidiary
November 2021	WWB Corporation succeeded the industrial-use solar power generation business from Japan Life Support Co., Ltd.
March 2022	Abit Corporation made Digital Sign Co., Ltd. a subsidiary
March 2022	WWB Corporation made Japan Mirai Energy Co., Ltd. and J. Mirai Co., Ltd. subsidiaries via second-tier subsidiary, WWB Solar 03 LLC
March 2022	Made Meiji Machine Co., Ltd. an equity-method affiliate
April 2022	Following the market reclassification by TSE, the company's shares were listed on the Standard Market.
October 2022	WWB made WWB Thang Long Corporation a subsidiary
November 2022	VSUN established Vietnam Sunergy Cell Company Limited (Cell Company)
January 2023	WWB made Flex Holdings Co., Ltd. a subsidiary
October 2023	FUJI SOLAR established TOYO Company Limited (TOYO)
June 2023	WWB made Taiwa Town Solar Power LLC and Ohira Village Solar Power LLC subsidiaries
October 2023	WWB made Sunshineties Co., Ltd. a subsidiary
January 2024	Joined the Japan Business Federation (Keidanren)
January 2024	TOYO acquired shares of Cell Company from VSUN, making Cell Company its subsidiary.
February 2024	VSUN established Vietnam Sunergy Wafer Company Limited.
July 2024	TOYO listed its shares on the NASDAQ Capital Market in the US
February 2025	Changed fiscal year-end to March (effective from FY2024)

Source: Shared Research based on company data

Major shareholders

Mr. Junsei Ryu has been Abalance's major shareholder since the company made WWB Corporation a wholly owned subsidiary through a share exchange conducted in November 2011. The company has no business ties with the other individual and corporate shareholders shown below.

As of December 31, 2024

Major shareholders	Shares held(year-end; '000)	Shareholding ratio
Ryu Junsei	5,260	29.47%
Iizuka Future Design Co., Ltd.	645	3.61%
Yutaka Hino	490	2.75%
Hiroshi Yamashita	380	2.13%
Isao Tsukamoto	338	1.89%
Rakuten Securities, Inc.	189	1.06%
Yoshie Iizuka	179	1.00%
BANK JULIUS BAER AND CO. LTD. SINGAPORE CLIENTS	152	0.85%
Meiji Machine Co., Ltd.	136	0.76%
Nomura Securities Co., Ltd.	135	0.76%
Total	7,905	44.29%

Source: Shared Research based on company data

Dividend policy

Abalance's basic policy is to accomplish stable dividend payments and actively return profits to shareholders in accordance with the state of its finances, while maintaining the necessary internal reserves to develop future businesses and strengthen the company's financial position. The company has paid dividends twice a year, consisting of an interim dividend and a year-end dividend, through FY06/24.

Top management

Title	President, representative director
Name	Ryusuke Okada
Date of birth	October 19, 1962
April 1986	Joined Nomura Securities Co.,Ltd.
August 2007	Joined Deutsche Securities Inc.
December 2012	Joined Takara Printing Co., Ltd. (not Takara & Company Ltd.)
August 2014	Executive officer, overseeing the corporate planning department and international business division
August 2018	Director and senior executive officer
August 2018	Chairman at Toin Corporation
April 2020	Chairman at Simul International, Inc.
September 2024	President at Abalance Corporation(current)

Source: Shared Research based on company data

Company philosophy

The Abalance group has adopted the corporate philosophy of “Best Values,” aiming to improve and enhance societal life through value creation by focusing on the provision of advanced products, businesses, and services. The group is committed to contributing to the sustainable development of society. It has also established its vision of becoming an “Excellent Creative Company.” Details are as follows.

Corporate philosophy “Best Values”

- We will continue to contribute to the sustainable development of society by striving to improve social life through value creation focusing on the provision of advanced products, operations, and services.
- Based on the vision of becoming an “Excellent Creative Company” by providing value, we will continue to improve and maximize employee happiness, win-win relationships with our clients and society, and corporate and shareholder value.
- Abalance Group will continue to grow driven by value creation, love, and excitement.

Vision “Excellent Creative Company”

- We will continue to contribute to a truly bright society by creating peace, safety, and optimal green energy, as well as light that illuminates people’s eyes and hearts.
- We will provide information technology and services that enhance productivity, which is safer, more convenient, and more advanced.
- We will provide construction machinery that is safer, more rational, more economical, and more productive.
- We will aim to be a global corporate group that always anticipates social changes and contributes widely to society, and pursues optimal management strategies.

Corporate governance

At its ordinary general meeting of shareholders held in September 2020, Abalance made a proposal to revise its articles of incorporation and shift to a company with an audit and supervisory committee, with an aim to further enhancing corporate governance and raising its corporate value. With the passing of this resolution, the company transitioned from a company with an Audit & Supervisory Board to one with an Audit & Supervisory Committee. As part of its governance enhancements, the company established a risk and compliance committee (chaired by an independent outside director) in October 2024 and strengthened the functions of the internal control committee (chaired by an executive officer). Both committees serve as advisory bodies to the Board of Directors, with a focus on reinforcing risk management and promoting compliance.

Form of organization and capital structure	
Form of organization	Company with Audit & Supervisory Committee
Controlling shareholder(excluding parent company)	-
Parent company	None
Directors and Audit & Supervisory Committee	
Number of directors under Articles of Incorporation	8
Number of directors	6
Directors' term of office under Articles of Incorporation	2 years
Chairperson of the Board of Directors	President
Number of outside directors	3
Number of independent outside directors	3
Number of auditors under Articles of Incorporation	-
Number of members of Audit & Supervisory Committee	3
Number of outside directors(Audit & Supervisory Committee)	3
Number of independent outside members of Audit & Supervisory Committee	-
Other	
Participation in electronic voting platform	None
Providing convocation notice in English	None
Implementation of measures regarding director incentives	Stock option
Eligible for stock option	Inside directors, Outside directors, Employees, Directors of subsidiaries, Employees of subsidiaries, Other
Disclosure of directors' compensation	No individual compensation disclosed
Policy to determine amount and calculation method of remuneration	Y
Corporate takeover defenses	None

Source: Shared Research based on company data

Note: As of October 2024

Sustainability

The Abalance group is dedicated to balancing social and economic value by advancing the businesses of its group companies that contribute to the supply of renewable energy. Through these initiatives, the group aims to reduce greenhouse gas emissions, a key driver of global warming, while enhancing the medium- to long-term value of its group companies. Under its 2030 group vision, Abalance aspires to become a "core global company in renewable energy," leveraging its Solar Panel Manufacturing and Green Energy businesses as growth engines to achieve sustainable growth and maximize corporate value.

Profile

Company Name

Abalance Corporation

Phone

03-6810-3028

Established

2000-04-17

IR Contact

<https://www.abalance.jp/en/contact>

Head Office

2-2-4 Higashishinagawa Shinagawa-Ku, Tokyo 140-0002

Listed On

Tokyo Stock Exchange, Standard Market

Exchange Listing

2007-09-19

Fiscal Year-End

Jun

About Shared Research Inc.

We offer corporate clients comprehensive report coverage, a service that allows them to better inform investors and other stakeholders by presenting a continuously updated third-party view of business fundamentals, independent of investment biases. Shared Research can be found on the web at <https://sharedresearch.jp>.

Contact Details

Company name

Shared Research Inc.

Phone

+81 (0)3 5834-8787

Address

2-6-10 Kanda-Sarugakucho Chiyoda-ku Tokyo, Japan

Email

info@sharedresearch.jp

Website

<https://sharedresearch.jp>

Disclaimer

This document is provided for informational purposes only. No investment opinion or advice is provided, intended, or solicited. Shared Research Inc. offers no warranty, either expressed or implied, regarding the veracity of data or interpretations of data included in this report. We shall not be held responsible for any damage caused by the use of this report. The copyright of this report and the rights regarding the creation and exploitation of the derivative work of this and other Shared Research Reports belong to Shared Research. This report may be reproduced or modified for personal use; distribution, transfer, or other uses of this report are strictly prohibited and a violation of the copyright of this report. Our officers and employees may currently, or in the future, have a position in securities of the companies mentioned in this report, which may affect this report's objectivity.

Japanese Financial Instruments and Exchange Law (FIEL) Disclaimer: The report has been prepared by Shared Research under a contract with the company described in this report ("the company"). Opinions and views presented are ours where so stated. Such opinions and views attributed to the company are interpretations made by Shared Research. We represent that if this report is deemed to include an opinion from us that could influence investment decisions in the company, such an opinion may be in exchange for consideration or promise of consideration from the company to Shared Research.