# CFA Institute Research Challenge

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## Team 10

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# Jinko Solar Co., Ltd

Ticker: 688223.SH
Date : 16 November 2023

Current Price CNY 10.02
Target Price CNY 20.83

Recommendation: BUY

## Overview

### Exhibit 1: Stock Overview

| | |
|---|---|
| First Trading Date | 26 January 2022 |
| Target Price | CNY 20.83 |
| Current Price | CNY 10.02 |
| Fiscal Year Ending | Dec-31 |
| 52-week High Price | CNY 19.26 |
| 52-week Low Price | CNY 8.39 |
| Dividend Per Share | - |
| Fully Diluted Shares Outstanding (m) | 11,183.9 |

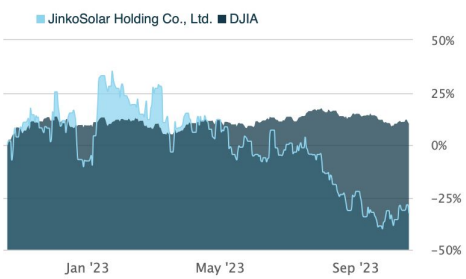
**All prices as of close 16 November 2023*

### Exhibit 2: Financial Ratios

| Ratios | FY23E |
|---|---|
| Quick Ratio | 1.0 |
| EPS | 0.6 |
| Liability/Asset | 0.8 |
| ROE | 20.1% |

*Source: Team Projections*

### Exhibit 3: 2023 Share Price Movement vs. DJIA (Dow Jones Industrial Average)




*Source: Refinitiv*

### Exhibit 4: Jinko Solar's Majority Shareholders

| Holder | Common Stock Equivalent Held | % of Total Shares Outstanding | Market Value in CNY Millions |
|---|---|---|---|
| *JinkoSolar Holding Co., Ltd.* | 5,862,072,000 | 58.62 | 61,066 |
| *Shangrao Jiarui Enterprise Development Center (Limited Partnership)* | 344,832,000 | 3.45 | 3,592 |
| *Li, Xiande* | 316,480,000 | 3.16 | 3,297 |
| *China Asset Management Co. Ltd.* | 230,844,734 | 2.31 | 2,405 |
| *Chen, Kangping* | 217,080,000 | 2.17 | 2,261 |

*Source: Bloomberg Terminal*

## Executive Summary

We initiate coverage on Jinko Solar Co., Ltd (688223.SH), or the Company, with a **BUY** recommendation and a target price of CNY 20.83, implying a 108.3% upside from the current price of CNY 10.02 as on November 16th 2023. This target price includes our intrinsic value range and is derived from our discounted cash flow (DCF) model. Based on our analysis, we believe that Jinko Solar's R&D momentum and innovation capabilities paired with its international operations, allow them to trendset technology within a growing PV market demand, entailing the stock's underpricing within the equities market.

Jinko Solar is a global solar technology company with highly innovative products and services, with a dominant market share across all global markets and a mission to serve the world with sustainable energy. The Company's business model encompasses the entire PV value chain, and specializes in the vertical integration of all parts within the industry; from silicon wafers to solar cells to solar module production. Beyond its PV products, Jinko Solar also produces solar energy storage systems, catering to both residential and commercial projects. Our analysis suggests that Jinko Solar is an undervalued company within its industry, and has high prospects for growth over the next 5-year period. We determined that Jinko Solar will have ample opportunities in the market, particularly with a robust electricity demand and falling costs, paired with the Company's elite research and development capabilities to capture additional shareholder value within the PV market.

### Poised to Capture N-Type TOPCon Mainstream Penetration

The solar PV market is transitioning from P-Type (P-Type Monocrystalline) to N-Type (N-Type Monocrystalline) modules as mainstream technology. Jinko Solar is positioned as a front-runner in capturing emerging N-type market penetration, boasting mass production efficiency of 25.5% for the Tunnel Oxide Passivated Contact (TOPCon) variant. Underpinned by robust domestic and global demand drivers, we expect Jinko Solar to expand its global footprint, with forecasted global market shares of 12% in photovoltaic modules, 10% in cells by FY 2027, and 15% domestically for modules.

### DCF Analysis Indicates a Compelling Investment Opportunity

The target price is established through a DCF valuation, mirroring an optimistic outlook driven by robust revenue growth and improving operational efficiency. Forecasts indicate efficient capital utilization, which leads to potential surplus cash generation. The implied share price suggests an attractive investment opportunity, contingent on market dynamics and successful execution of growth strategies. With the assumption based on our analysis on market dynamics and the expansion strategies of Jinko Solar across the valuation, the implied price per share of CNY 20.83 implies a potential upside, making Jinko Solar an attractive investment opportunity. The price from comparable company valuation is relatively low, ranging from CNY 5.7 to CNY 20.9. Due to the special revenue composition and growth potential, we will use the price per share from DCF method as target price.

### Mitigating Risk Through Management and Innovation

Jinko Solar mitigates risks of competition and price fluctuation through the process of diversification of its products, active supply chain management, and innovation. Jinko Solar's diverse product offerings such as its various solar modules (Cheetah Series, Tiger Series, Swan Series and etc.) and its wide geographic presence allows Jinko to mitigate risks associated with fluctuations in demand of a particular product in a specific region. Jinko Solar's reliance on multiple suppliers allows the company to implement strategies to reduce risks within material shortages and fluctuating prices. Jinko Solar's innovation has allowed Jinko to be a key leader in the photovoltaic industry. With strong focus in its research and development in developing more efficient solar technologies, Jinko not only reduce technological obsolescence risks but also improves its competitiveness in its respective market.

## Key Financials

| Jinko Solar | Fiscal Year Ending 31 December (In CNY millions except Earnings Per Share) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Period | 2023/06/30 LTM | FY 2023E | FY 2024E | FY 2025E | FY 2026E | FY 2027E | FY 2028E | FY 2029E | FY 2030E | FY 2031E | FY 2032E |
| Revenue | 102,893.0 | 133,162.8 | 174,986.7 | 204,596.7 | 235,833.7 | 273,110.8 | 284,340.7 | 291,773.7 | 299,401.4 | 307,228.4 | 315,260.3 |
| Revenue Growth Rate | 24.5% | 29.4% | 31.4% | 16.9% | 15.3% | 15.8% | 4.1% | 2.6% | 2.6% | 2.6% | 2.6% |
| EBITDA | 13,441.5 | 9,457.5 | 11,242.4 | 13,349.4 | 20,575.9 | 26,695.9 | 31,039.7 | 37,832.5 | 44,510.2 | 49,821.4 | 54,591.7 |
| EBIT | 7,650.6 | 7,634.3 | 9,142.6 | 11,303.4 | 17,745.9 | 23,418.5 | 25,921.6 | 32,580.6 | 38,222.8 | 42,447.9 | 47,025.5 |
| Net Income | 6,153.7 | 6,721.5 | 7,882.1 | 9,677.1 | 15,175.8 | 20,105.0 | 22,408.5 | 28,334.8 | 33,494.8 | 37,470.6 | 41,795.9 |
| Net Profit Margin | 6.0% | 5.0% | 4.5% | 4.7% | 6.4% | 7.4% | 7.9% | 9.7% | 11.2% | 12.2% | 13.3% |
| FCFF | 1,723.3 | (6,255.5) | 1,192.7 | 3,280.9 | 4,291.7 | 6,180.1 | 8,463.0 | 11,241.1 | 11,505.0 | 11,913.4 | 11,968.1 |
| EPS (Diluted) | 0.53 | 0.60 | 0.71 | 0.87 | 1.36 | 1.80 | 2.01 | 2.54 | 3.00 | 3.36 | 3.74 |

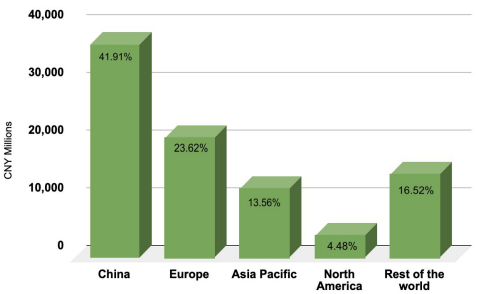
# Business Overview

**Exhibit 5: Float Analysis**

| Jinko Solar Co., Ltd. | | |
|---|---|---|
| **Standardized Data** | | |
| | Company Employees / Individual Insiders | 533,560,000 |
| + | Strategic Corporate Investors | 6,667,061,233 |
| + | VC/PE Firms (>5% stake) | - |
| + | State Owned Shares | - |
| + | ESOP | - |
| + | Company Controlled Foundation | - |
| + | Unregistered Shares | - |
| + | Hedge Fund Managers (>5% stake) | - |
| + | Remaining Untraded Shares | - |
| + | Sovereign Wealth Funds (>5% stake) | - |
| | **Total Shares Excluded From Float** | **7,200,621,233** |
| | Free Float Shares | 2,799,378,767 |
| / | Shares Outstanding | 10,000,000,000 |
| | **Float** | **28%** |

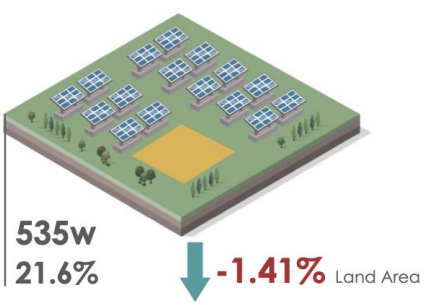
*Source: Capital IQ*

**Exhibit 6: Revenue by Region FY 22**



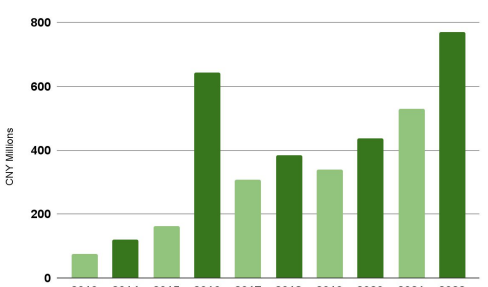

*Source: Jinko Solar FY 2022 Annual Reports*

**Exhibit 7: Tiger Series Solar Module**




*Source: Jinko Solar Brand Whitepaper*

**Exhibit 8: R&D Expenditure**




*Source: Jinko Solar Annual Reports (FY 2013 - FY 2022)*

## Overview

Jinko Solar Co., Ltd was founded in 2006 in Shanghai, China with a vision to make solar energy accessible and sustainable for the globe. The Company is a highly innovative and global solar technology company, and has grown exponentially to become the frontrunner within the solar photovoltaic industry, operating globally across all continents with majority of its business focused within China (Exhibit 6). The Company's mission is to "change the energy portfolio and to take responsibility for enabling a sustainable future", and strategically positions itself across the core segments of the photovoltaic industry.

## Business Model

The firm focuses on the integrated research, development and manufacturing of photovoltaic products as well as provision of comprehensive clean energy solutions. Its core business segments revolve around the design, production, and distribution of high-quality solar modules, silicon wafers and solar cells (Appendix 1). These components are essential for solar energy generation and are utilized in various applications, from residential rooftop installations to large, commercial scale solar farms. Its wide array of business segments has allowed the firm to lead in sales in the global mainstream photovoltaic market.

## Vertical Integration

Jinko Solar prides itself on pioneering the 'vertical integration' capacity from silicon wafer and cell to module production in the PV industry. The Company owns 14 globalized manufacturing bases in China, Malaysia, Vietnam and the United States. With a workforce of over 2,000 research and development professionals, Jinko Solar has earned a variety of accolades including "National Enterprise Technology Center" and "Manufacturing Single Champion Enterprise" among others. The Company has also played a pivotal role in establishing multiple international and domestic industry standards such as with the International Electrotechnical Commission (IEC), continuously expanding the diversified application scenarios of photovoltaic technology. Jinko Solar has done this through its initiative to standardize rectangular silicon wafer module dimensions with 9 other solar module companies. As the first company to exceed 165 gigawatts (GW) in module shipments, it holds a global market share of 15% and is a market leader in 8 out of 10 photovoltaic markets globally (Company Filings 2023). Jinko Solar strategically maintains vertical integration throughout its operations. It controls the entire solar value chain, from producing silicon wafers and solar cells to manufacturing complete solar modules, as well as the development of clean energy storage systems. This approach allows the Company to manage quality, optimize costs, maximize revenue streams and ensure product reliability, ultimately providing the firm with a unique competitive edge.

## Products and Services

Jinko Solar's extensive product portfolio includes a wide range of solar modules with varying wattages and specifications to cater to diverse energy needs. The Company's products are widely known for their high efficiency, durability and takes up 1.4% lesser land area, making them suitable for residential, commercial and utility-scale applications (Exhibit 7). Additionally, the Company provides comprehensive solar solutions, which encompass project development, financing, installation, and maintenance services. As mentioned prior, Jinko Solar's products consists of three large categories: silicon wafers, solar cells and solar modules, with solar modules leading its revenue share. In FY 2022, Jinko Solar's revenue breakdown included silicon wafers at CNY 466.5 million (0.6%), solar cells at CNY 1,024 million (1.2%), and solar modules at CNY 80,224.3 million (96.5%), contributing to their respective percentages of total revenue. Solar Modules are responsible for a large proportion of revenue share as it is Jinko Solar's trademark product that is catered to the end-market, while silicon wafers and cells are manufactured for middle to low market segments. Jinko Solar's state of the art solar modules boast conversion efficiencies of over 20% (Appendix 3) and are applicable to a wide range of market segments. N-Type and P-Type monocrystalline solar modules are differentiated by their components, efficiency and durability (Appendix 4). N-Type modules are typically more expensive to produce due to their superior characterics over P-Type modules. On the other hand, N-Type modules are typically used in applications where high efficiency and durability are critical, such as residential installations and premium commercial projects, while P-Type modules are widely used in various solar projects including utility-scale solar farms, where cost effectiveness and capacity conversion efficiency are important (Appendix 3).

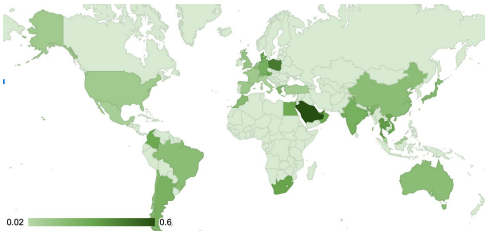
## Global Footprint

Jinko Solar's products serve over 180 countries and regions worldwide, catering to more than 3,000 clients (Appendix 2). On top of being the global leader in module shipments, the Company is also an industry opinion leader in various international frameworks such as the B20 (Business 20 under Group of 20) and RE100 green initiative (100% Renewable Energy). The Company has established local subsidiaries, distribution centers, and warehouses worldwide to serve a diverse customer base. This global presence helps the Company stay agile and responsive to regional solar market demands, while also diversifying its geographic footprint to reduce geopolitical risks (Exhibit 9).

## Value Proposition | Value-Based Strategy

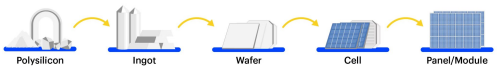
In FY 2021, Jinko Solar revamped its brand new value-based strategy, which redefined the purpose of the corporation to promote a business for social good and a business that can enable others to make social good.

**Exhibit 9: Global Operations**



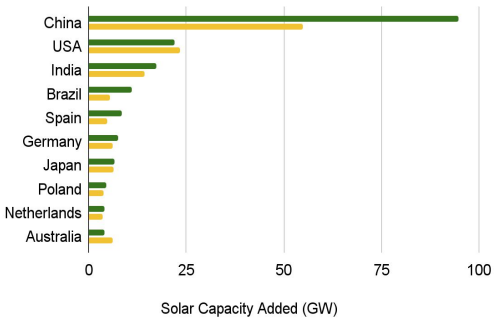

*Source: Jinko Solar FY 2022 Annual Reports*

**Exhibit 10: Solar PV Production Stream**



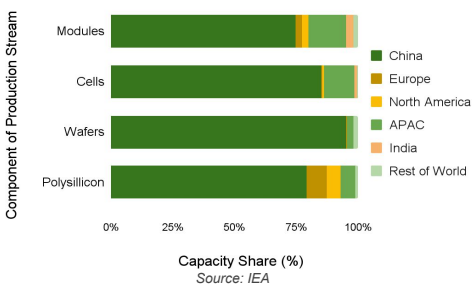

*Source: International Energy Agency (IEA)*

**Exhibit 11: 2022 Top Ten Solar Markets by Capacity Addition (FY 2021 - FY 2022)**



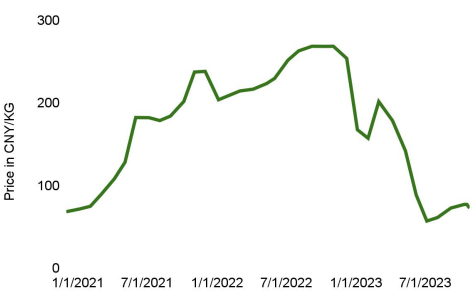

*Source: IEA*

**Exhibit 12: Manufacturing Capacity Share of PV Production Stream by Region FY 2021**




*Source: IEA*

**Exhibit 13: Solar Grade Polysilicon Price (Dec 2020 - Oct 2023)**




*Source: Bloomberg Terminal Index*

This new strategy accentuates Jinko Solar's mission to incorporate social responsibilities into their products, services and entire business model, taking a step further from its previous strategy of supporting the transition to clean energy. Jinko Solar leverages its massive customer base across the world to empower other organizations and related industries to achieve carbon neutrality. In addition to solar module sales, Jinko Solar would work with an unrivaled ecosystem of partners including institutions, energy designing house, key component vendor, system integrators, omnichannel distributors and EPC (Engineering, Procurement and Construction), cross-industry conglomerates to deliver consulting, design, deployment, optimization of customer pathway to carbon neutrality - harnessing the data, products, technologies and services that make them possible.

Jinko Solar's value proposition lies in its immense size and capacity to manufacture sustainable and socially responsible products along the entire PV value chain. Jinko Solar's main products (silicon wafers, solar cells and solar modules), are key components and final products within the PV value chain and allows them to stand at the forefront of PV technology and global demand. The Company produces high-quality solar modules by ensuring the production process includes 52 tests to ensure no micro-cracks, while inviting 3rd party institutes such as the Australian Solar Council Positive Quality Program to audit their facilities, test their products to ensure the highest quality standards. Jinko Solar also offers a diverse range of solar modules suitable for different applications, from residential to commercial and utility-scale projects. This broad portfolio allows customers to select the best-fit solution for their specific solar needs. Jinko Solar continuously invests in research and development (R&D) to stay at the forefront of PV technology, the Company spent a total of CNY 530 million on R&D in FY 2021 (46% of net income), which increased to CNY 769 million in R&D in FY 2022 (26% of net income). This has allowed their products to incorporate the latest advancements in technology, resulting in high energy conversion efficiencies. As mentioned prior, Jinko Solar's commitment to environmental sustainability and social responsibility has aligned well with growing global demand for sustainable energy solutions. With operations spanning cross-borders, across global markets and serving customers in various regions and economic hubs, Jinko Solar's global presence allows them to make solar energy solutions accessible to a wide audience while also meeting the needs of customers around the world. Lastly, Jinko Solar's leadership position within the PV market enables them to spearhead the global shift to green energy. The Company plans to achieve 100% use of renewable energy by FY 2025, in accordance with the 1.5°C emission reduction path of the RE100 initiative.

# Industry Overview & Competitive Landscape

### Solar PV Business

Jinko Solar's product portfolio spans the length of the solar PV production chain encompassing PV modules, batteries, and Si wafers (Exhibit 10). Solar (PV) leads all renewable energy sources in cumulative power capacity, expected to overtake coal and natural gasses to become the largest source of electricity between FY 2025-2027 (Source: IEA). China's solar PV market is the world's largest, installing 94.7 GW of solar capacity in FY 2022, over 4x the second largest United States (Exhibit 11). China, having surpassed 400 GW in total solar installations, is projected to augment this capacity by an additional 120 GW by the end of FY 2023. Despite North America and Europe having strong upstream module capacity in assembly, China manufactures nearly all inputs for solar PVs. As of FY 2022, China represented 98% of global silicon wafer production, more than 85% of cell production, and 77% of module production capacity (Exhibit 12), indicating significant bargaining power across all solar PV production stages.

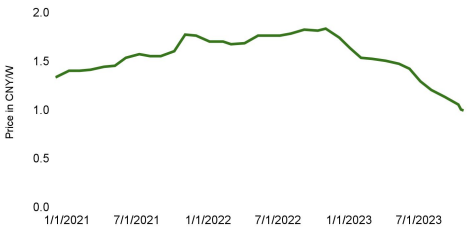
### Chinese Growing Energy Needs and Government Targets Drive Domestic Demand

China's power demand maintains its upward trajectory, with projections of 9.8-10.2 trillion kWh consumption by FY 2025 (Source: China Electric Power Planning and Engineering Institute). The government envisions a significant role for solar energy, setting targets to enhance solar capacity and demand. The 15th Five-Year Plan, unveiled in July 2022, pushes renewable energy's contribution from 29% in FY 2020 to 33% by FY 2025. Concurrently, China's Nationally Determined Contribution (NDC) eyes 1,200 GW from wind and solar by FY 2023, a target the nation is projected to hit 5 years in advance. Demand is bolstered by positive supply-side changes, particularly the reactivation of solar projects previously stalled when polysilicon costs surged from under CNY 70/KG in 2H 2020 to nearly CNY 240/KG in 2H 2021 (Exhibit 13). Chinese supplier competition and strong global demand have led to strong investments globally in manufacturing capabilities. Prices have since stabilized and are falling, with China's Mono PERC and TOPCon (two major types of market mainstream cell technologies) solar module prices reaching record lows of CNY 1.09/W and CNY 1.14/W respectively in September 2023 (Exhibit 14). Projects delayed in the post-pandemic period are resuming, aligned with price stabilization, as evidenced by China's 155% increase in new solar capacity in Q1 2023 (Source: IEA). We anticipate sustained demand momentum for renewable energy, bolstered by easing supply-side costs, as evidenced by the China Photovoltaic Industry Association (CPIA) increasing its FY 2023 solar capacity installation forecast from 95 GW to 120 GW, in response to strong demand in H1 2023.

### Strong Demand from Europe in Aftermath of Energy Crisis

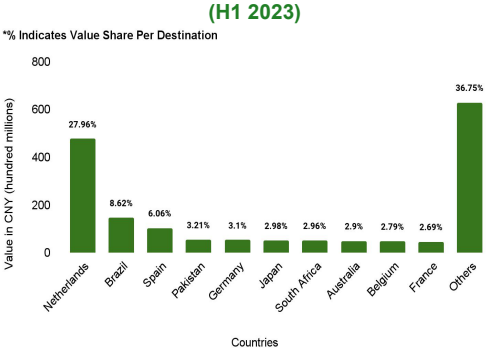
European demand remains a bright spot for the industry, receiving 58% of China's total solar PV exports H1 2023 (Exhibit 15). Natural gas demand in the EU fell by 13% after the Russia-Ukraine war, contributed by milder temperatures and an 80% reduction in supplies of Russian gas (Source: IMF). During this period, Europe experienced COVID-related supply chain disruptions, marked by spikes in polysilicon prices, which contributed to a global slowdown in solar projects.

**Exhibit 14: Solar Standard Monocrystalline Module Price (Dec 2020 - Oct 2023)**




*Source: Bloomberg Terminal Index*

**Exhibit 15: China Solar PV Export Destination Value Share (H1 2023)**

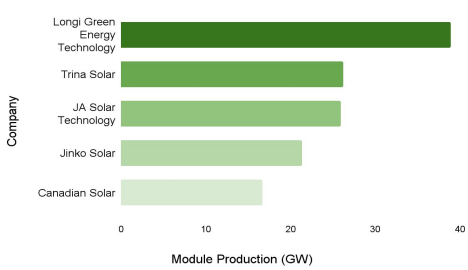



*Source: Ministry of Commerce PRC*

**Exhibit 16: Trade Balance Along PV Production Chain (FY 2017 - FY 2021)**

*Source: IEA*

**Exhibit 17: Top 5 Manufacturers by PV Production Capacity (FY 2021)**




*Source: IEA*

During this period, Europe experienced COVID-related supply chain disruptions, marked by spikes in polysilicon prices, which contributed to a global slowdown in solar projects. Europe responded with policy support, primarily through feed-in tariffs (FiT) and setting solar capacity targets. Consequently, European renewables have seen an upward trend, bolstered by robust regional policy support that accelerates investment and demand. The EU notably added a record 41 GW of solar capacity last year, a 46% increase from 28 GW in FY 2021 (Source: IEA), with solar energy's share in Western Europe's power mix expected to more than double by FY 2030. Chinese firms are strategically positioned to leverage the escalating European demand, with intense competition among Chinese manufacturers driving attractive prices that meet the EU's growing market demand. A McKinsey report from December 2022 identified a CNY 0.45/W price differential favoring Chinese modules (at a spot price of CNY 1.2/W), and this differential is likely to have widened due to recent further reductions in polysilicon prices, which have brought Chinese module prices down to CNY 1.1/W by October 2023 (Exhibit 13 and 14). This pricing dynamic poses challenges for European firms, which are contending with higher energy and labor costs, resulting in a more expensive supply chain and squeezed margins. An open letter from Solar Power Europe to the European Commission stated that even scaled firms are unable to match Chinese prices. Therefore, unless countered by regional policy changes, China's pricing competitiveness and manufacturing dominance are expected to sustain Europe's growing demand for Chinese solar PVs.

### Stable Growth Amidst Geopolitical Tension in the Americas

The overall Americas market is surging, driven by Latin America's benefit from low system costs due to new policy support, and the US market's resurgence following the temporary waiver of import tariffs for foreign manufacturers amid easing COVID supply chain constraints. In Latin America, Brazil has become a key player, contributing 32 GW to the region's cumulative solar PV capacity by July 2023, which accounts for about 15% of Brazil's total power mix. Jinko Solar held leading market share in Brazil in FY 2022, with over 17.6% share among a fragmented market of 71 players in Brazil (Source: Jinko Solar). A major driver for Jinko Solar's success in Brazil is cutting-edge technology in products, partnering with local Brazilian companies for expansionary solar PV projects. We expect Jinko Solar's strong performance to continue in Brazil, supported by a strong local presence. The U.S. market outlook remains positive, evidenced by solar PVs accounting for 54% of new electricity capacity additions in Q1 2023 (Source: U.S. Energy Information Administration), bolstered by tax incentives from the Inflation Reduction Act (IRA) promoting the solar industry's development. While geopolitical tensions present a concern, their impact has been limited, thanks to China's significant role in the solar PV supply chain. This is evident from the close affiliations between the USA's major Southeast Asian PV trading partners and prominent Chinese solar firms. In an investigation into Chinese solar firms avoiding US import tariffs, five Chinese firms including BYD and Trina Solar were found guilty, with additional tariffs on these firms expected to follow. Jinko Solar's compliance with these regulations positions it for continued robust exports to the Americas, especially as competitors face increased marginal costs

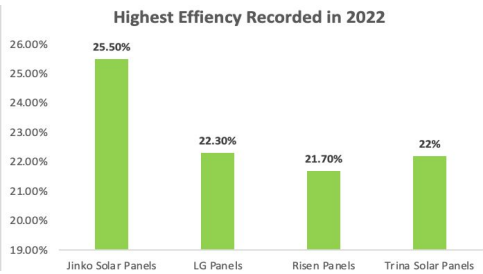
### Renewable Targets Underpin Strong Supply Side Capabilities in APAC

APAC leads the global solar PV market by region in capacity and manufacturing. While China dominates the market with its aforementioned supply and demand strengths, its investments in Southeast Asia have also fostered strong manufacturing exporters there. Southeast Asian countries like Malaysia, Vietnam, and Thailand have benefitted from US tariffs on Chinese solar PVs, and it was estimated last year that Southeast Asia and Korea held 18% of the global cell manufacturing utilization, under China (almost 80%) and the rest (~2% combined) (Exhibit 16). In terms of demand, the APAC-ex China market is shifting from feed-in tariffs—a policy that encourages investments through guaranteed premium pricing—to competitive auctions for solar projects and other cost-effective business models. Auctions and expected capacity expansion support growth estimates of around 70% (360GW) in solar capacity for APAC-ex China from FY 2022-2027 (Source: IEA). The two largest APAC-ex China players, India and Japan, are on an upward trajectory, collectively adding 17.4 GW and 6.5 GW of capacity. India was around 30 GW short of total capacity target for FY 2022, and India's Ministry of New & Renewable Energy Grid Solar Power Division (MNRE) have since announced production incentive schemes to bolster demand. Japan has similarly led with policy, with generous FiTs and recent competitive auctions driving demand for solar grid demand. Several countries, including India (net zero emissions by FY 2070), Japan (100% renewable by FY 2050), and Australia (82% renewable by FY 2030), have set ambitious renewable energy targets.Over the long term, the implementation of revised policies and renewable energy targets is anticipated to fuel the growing solar market in APAC-ex China.

### Positioning Highlight: Well-Positioned to Capture Emerging N-Type Technology Penetration

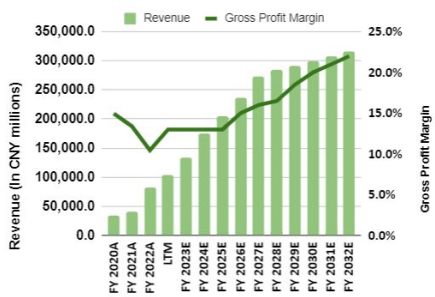
Cost reduction and efficiency gains are key to photovoltaic industry progress. The rapidly improving capacity of N-type solar PV modules is expected to displace the current market-leading PERC P-type solar module as mainstream by FY 2025. Power difference between N-type and P-type PV cells is expected to increase from the current 25-30W to 50W, with N/P type silicon price spread rising to CNY 14/kg (19%), a growing trend for margins of the N-type (Source: CICC). As the mass-produced conversion efficiency of P-type cells is approaching its theoretical limit, N-Type's high conversion efficiency, good weak light performance, and strong bifacially lays the groundwork for its emergence as the leading solar module technology. Jinko Solar, a pioneer in this field, established a 16 GW N-type TOPCon cell production base by mid-2022. Jinko Solar, a pioneer in this field, established a 16 GW N-type TOPCon cell production base by mid-2022. The Company leads in manufacturing capabilities, boasting a capacity of 35 GW for N-type TOPCon across its Hefei and Haining factories, surpassing major competitors like Trina Solar (8 GW) and DA Solar (30 GW) by FY 2022.

**Exhibit 18: Module Efficiency**




*Source: National Renewable Energy Laboratory*

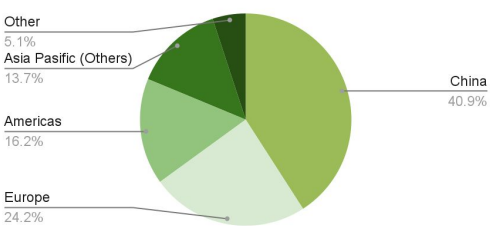
**Exhibit 19: Gross Profit Margin**




LTM refers to the Last Twelve Months ending on June 30th, 2023.

*Source: Jinko Solar Annual Reports; Team Projections*

**Exhibit 20: FY 2022 Revenue Breakdown**




*Source: Jinko Solar FY 2022 Annual Report*

**Exhibit 21: Inventory Turnover**

*Source: Jinko Solar Annual Reports; Team Projections*

The Company's mass production efficiency for N-type TOPCON cells reached 25.5% (Exhibit 18), with cells producing a watt-peak (wp) 25-30 watts higher than corresponding PERC P-type cells (Source: CICC). Jinko Solar shipped 16.4 GW of N-type modules in H1 2023, comprising 53% of total deliveries. Notably, it became the first company to exceed 10 GW of N-type shipments in a quarter (Q2), and anticipates N-type to represent 70% of its cell capacity by year end-2023. As such, Jinko Solar's technological positioning mandates a technology premium and is well positioned to be a trendsetter for the incoming mainstreaming technology.

### Competitive Landscape

Since Q2 2023, top Chinese PV firms have revealed expansion plans totaling CNY 90 billion, predominantly in N-type TOPCon technology. An oligopolistic market, it's dominated by key players like Jinko Solar, JA Solar, Longi Green Energy, and Trina Solar (Exhibit 17). Estimates see global solar capacity demand at 386 GW, capacity fulfilled 2-3x over by year end 2023. COVID related polysilicon price spikes are in the rearview, as rapidly falling polysilicon prices pressure margins for Chinese firms focusing on lower levels of the production chain. Domestic players lead the global solar PV market, and most of the top ten PV firms by module production capacity are Chinese. China concurrently accounts for 55% of total PV operation and maintenance patent applications, outpacing other market leaders like the US and Japan (Source: Foresight Industry Research), indicating high research and development investments. We believe Jinko Solar will continue holding major market share in the intermediate-term horizon, contributed by diligent R&D investments across market segments, global demand catalysts and strong manufacturing positioning for N-type modules.

# Investment Summary

### Thesis: Jinko Solar's Demand Environment Provides a Rise in Earnings

We believe that the market has not accurately priced JinkoSolar due to Jinko Solar's forward looking demand. It is the team's perception that the market has mispriced Jinko Solar's R&D momentum in scaling innovation, incorporation of an international network, and adaptability to change within the PV industry through trendsetting technology.

### R&D Momentum Scales Innovative Capabilities Satisfying Market Appetite

Jinko Solar's R&D investment growth has averaged around 30% YoY, supporting strong patent filing and approval performance (Exhibit 19). This commitment to innovation, combined with incremental growth of the PV industry and improving industry regulations, accentuates the Company's potential growth within the sector. Further, with its solar modules continuously making breakthroughs in technology - record breaking capacity and energy efficiency - this puts light on how the Company will continue drive revenue growth through its dedication to innovative products and services. We believe this strength in R&D will align well with growing demand for sustainable energy sources, particularly with countries subsidizing companies to go green. In the first and second quarters of 2023, Jinko's module shipments have reached 13GW and 17.8GW which means that the Company has already sold 21.2GW of modules in the third quarter this year. In comparison to other solar module leaders in the industry, Jinko Solar's sales have shown upside in comparison. With its 31GW of shipments, it has been greater than Trina Solar's 27GW, LONGi's 27GW, and Ja Solar's 24GW.

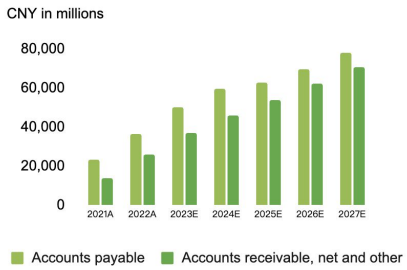
### International Network Creates Scale Advantage Fueling Growth

We also believe that Jinko Solar possesses the economic moats needed to maximize market share as the PV industry continues to grow. Utilizing its global operations and ecosystem of partners, Jinko Solar is able to resourcefully structure footholds in new expansions easily, while also ensuring that they can cater to global demand without any geographical challenges. For instance, Jinko Solar's TOPCon cells had a conversion efficiency of 25.5% in Q3 2023. With plans to research into the technology that goes behind the TOPCon cells, Jinko is aiming for a conversion efficiency of 25.8% by the end of the year. The R&D behind the TOPCon cells has the potential to push Jinko back to the top of the global solar module rankings. With plans to ship 100 GW of modules in 2024, the Company is already on pace to sell around 77GW in 2023. According to Jinko Solar, the Company distributes its solar products and sells its solutions and services to a diversified international utility, commercial and residential customer base in China, the United States, Japan, Germany, the United Kingdom, Chile, South Africa, India, Mexico, Brazil, the United Arab Emirates, Italy, Spain, France, Belgium, Netherlands, Poland, Austria, Switzerland and Greece. This immense global clientele allows the Company to meet demand when and where it is needed, and allows Jinko Solar to be at the forefront of global PV demand. Further, the Company has 14 production facilities globally and 21 overseas subsidiaries, ensuring that the Company is able to deliver its products and services to regions across the globe. Jinko's expertise in inventory management in response to such an international customer base, Jinko Solar has implemented a vast and efficiency distribution system in more than 20+ countries and partners with suppliers of PV system components achieving reliability and customer retention/loyalty.

### Defending Market Share Through Trendsetting N-Type Technology and Supply Chain Flexibility

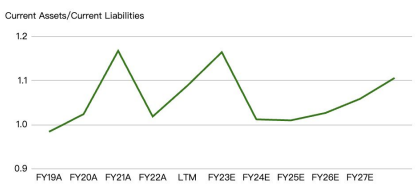
In Q2 2023, Jinko Solar exhibited robust operational momentum, with module shipments and other premium products experiencing a remarkable 36.2% sequential and 74.4% year to date (YTD) uptick. The firm's total revenues surged to CNY 30.7 billion, marking an 18.4% quarter on quarter (QoQ) and 72.5% YTD increase, indicative of surging demand for its offerings.

**Exhibit 22: Accounts Receivable & Payables**



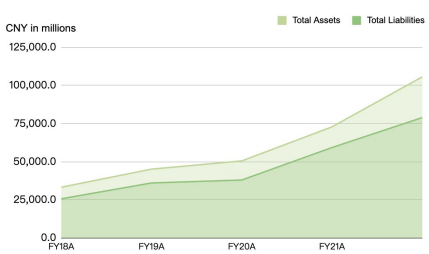

*Source: Jinko Solar Annual Reports; Team Projections*

**Exhibit 23: Quick Ratio**



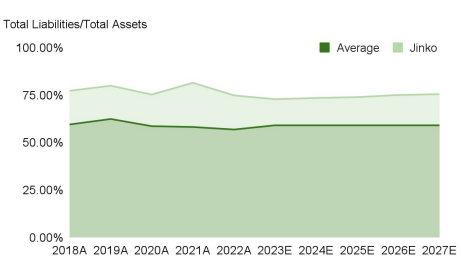

*Source: Jinko Solar Annual Reports; Team Projections*

**Exhibit 24: Liabilities & Assets**




*Source: Jinko Solar Annual Reports; Team Projections*

**Exhibit 25: Debt Ratio Comparables**




*Source: Jinko Solar Annual Reports; Team Projections*

This pronounced demand is primarily attributed to the large-scale modulus production of the Company's N-type TOPCon high-efficiency battery, boasting a mass production efficiency of 25.5%, creating a supply deficit in the global arena and garnering a premium in the market. Leveraging its early mover advantage in N-type technology, alongside enhancements in production capacity integration, Jinko Solar has swiftly expanded its N-type product shipment share. Proactively navigating through international market's supply chain price volatilities and policy shifts through its partnerships with industry partners and its diversified supply chains, the Company has secured a leadership position in shipments and witnessed rapid profitability escalation. In a strategic move to augment its TOPCon production capabilities, Jinko Solar is set to initiate a 56GW large-scale vertically integrated base project in Shanxi in May 2023, spanning four phases over a two-year construction timeframe. Each phase encapsulates a 14GW integration of rod drawing, slicing, battery cells, and components, positioning the Company to capitalize on the expanding solar module and wafer sector. Given these dynamics, we posit that Jinko Solar is strategically aligned for sustained growth, underpinned by increasing market demand and its fortified operational framework.

# Financial Analysis

### Income Statement

### Profitability

Despite the challenges posed by COVID-19, Jinko Solar has navigated through high production costs, leading to a stable gross margin since 2020. The gross profit margins in FY 2020, FY 2021, and FY2022 are 14.9%, 13.4%, and 10.4% respectively. In 2022, Jinko strategically accelerated integration and production expansion, driving substantial profit growth. The rapid expansion of integration capacity and the promotion of N-type products contribute to the Company's leading shipment volume and profit surge. As a pioneer in TopCon technology positions Jinko for a first-mover advantage, Jinko is expected to enjoy increasing market share. The Company's globally established brand image and cost-effective pricing further enhance its potential for a brand premium in the future. In response to the escalating domestic and overseas demand, Jinko Solar is poised for continued growth and influence in the dynamic solar energy market.

In addition to the obvious advantages of TOPCon and the continuous advancement of technological iteration, the Company is also continuously increasing its integration at home and abroad. The Shanxi 56GW integrated base announced in May 23, with 14GW of each phase expected to be put into operation in Q1/Q2 2024, and the third and fourth phases expected to be completed and put into operation in 2025; The advantages of integration and collaboration are obvious, which can further promote cost reduction. Therefore, we believe that Jinko Solar's gross profit margin will reach 12.9% in FY 2023, with an upward trend in the ensuing years.

### Balance Sheet

### Inventory and Inventory Turnover

In response to the increasing amount of production and shipments, Jinko Solar's inventory performs an increasing trend, with a leap of 109% from CNY 8,362.9 million in FY 2020 to CNY 17,450.3 million in FY 2022. At the meantime, inventory turnover days of FY 2020, FY 2021, and FY 2022 are 86.2, 110.7, and 74.6 respectively. The decrease of inventory turnover days from indicates that the Company improved its operational efficiency and can contribute to a better liquidity position.

### Accounts & Notes Receivable & Payable

The increase in the Company's photovoltaic module sales corresponds to an increase in accounts receivable; The accounts payable increase was mainly due to the increase in equipment and engineering payments. Although the payable items exceed receivable items, given the Company's sufficient cash and cash equivalents, as well as its stable liquidity position, the growth of AR & AP and the gap between which should not become a threat.

### Debt Ratio

Debt ratio of Jinko Solar is high, keeping in a range from 70% to 80%. Getting listed in SSE in FY 2022 helped Jinko do financing to compensate for its high liabilities. The dangerous signal is a shared issue in the industry in China. The average Debt-Asset Ratio of 10 listed Chinese photovoltaic companies has exceeded 55%, while compared to its comparables, the debt ratio of Jinko is still extremely high.

# Valuation

### The Discounted Cash Flow (DCF) Model

We use the DCF Model to calculate the levered FCFF of Jinko Solar and get the intrinsic value (Appendix 8). The base year timeframe of valuation is the Last Twelve Months (LTM) ending on June 30th, 2023. Due to the favorable policy support and demand expansion, we apply a two-stage DCF model and assume that the Company will go through a fast growth period in the next five years (2023-2027), and enter a stable growth period after 2027. The explicit forecast of Jinko Solar's three financial statements for the next 10 years (2023-2032) is shown in Appendix 6.

**Exhibit 26: DCF**

| DCF Calculations (In CNY millions except share price) | |
|---|---|
| Terminal Growth Rate | 2.77% |
| WACC | 10.50% |
| Tax Rate | 15.0% |
| Enterprise Value | 224,619.1 |
| (-) Debt | 15,276.4 |
| (+) Cash & Equivalents | 23,614.3 |
| Equity Value | 126,538.8 |
| Number of Diluted Shares | 11,183.9 |
| Implied Share Price | CNY 20.83 |
| Current Share Price | CNY 10.02 |
| Premium Per Share | CNY 10.81 |

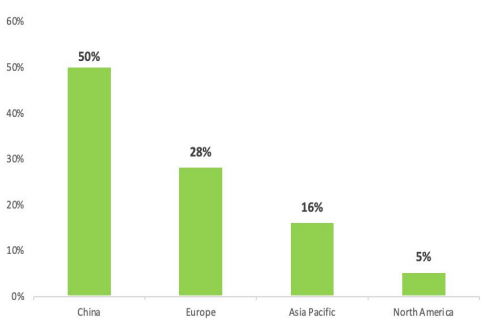
*Source: Jinko Solar Annual Reports; Team Projections*

**Exhibit 27: ERP, CRP and Terminal Growth Rate**

| Geographic Segment | Revenue Weight | Total Equity Risk Premium | Country Risk Premium | Long-Term GDP Growth Rate (nominal) |
|---|---|---|---|---|
| China | 40.0% | 6.1% | 1.1% | 3.7% |
| Europe | 30.0% | 6.4% | 1.4% | 1.5% |
| Americas | 20.0% | 11.0% | 6.0% | 2.3% |
| Asia Pacific (Except China) | 10.0% | 7.6% | 2.6% | 4.1% |
| Total | 100% | **7.30%** | **2.30%** | **2.77%** |

*Source: International Monetary Fund, Aswath Damodaran ERP Data*

**Exhibit 28: Revenue by Region 2022**




*Source: Jinko Solar FY 2022 Annual Reports*

### Tax

As Jinko Solar is in the status of high and new technology enterprise (HNTE), it has enjoyed a beneficial in enterprise income tax rate of 15%. We believe that Jinko Solar will maintain its HNTE qualification and Chinese government will continue the preferential tax treatments at least for the next 10 years. Therefore, the tax rate for our projection will sustain at 15% as opposed to the standard 25% statutory tax rate.

### Revenue

We analyzed Jinko Solar's future revenue across its key business segments, focusing on solar photovoltaic modules as the cornerstone of its international operations. Employing a top-down approach, we projected photovoltaic module revenue by multiplying market share with the expected market production capacity. We break down future revenue projection based on the four main business segments of Jinko Solar:

1) Photovoltaic Modules

The photovoltaic modules are the end products of the Company's production chain and the most important and international business segment of Jinko Solar. We adopted a top-down approach to project future revenue of PV modules, multiplying Jinko Solar/Global Production Capacity (%) by the projected market production capacity to get the company-specific capacity. Given the global growing energy demand and resilient domestic market, we applied a CAGR of 25% in the following 2 years (2023-2024) and make it gradually return to 3% across the longer span (2025-2032). Due to Jinko Solar strong industrial position and global layout, its global and domestic market share is expected to increase, showing a CAGR of 12.5% for the revenue of photovoltaic in the projection period.

2) Photovoltaic Cells

The Company purchases silicon raw materials and processes them into silicon wafers, which are then processed into battery cells through the cell production process.The photovoltaic cells holds a global sales distribution but with a focus in Asian region. We assume the CAGR of photovoltaic cells market size will be around 9% for the projection period (2023-2032). The global and domestic photovoltaic cells production capacity is expected to gain a strong increase about 40% in 2024 and will gradually return to stable growth of 3% later because photovoltaic suppliers are closing the cell-module capacity gap.

3) Silicon Wafer

The silicon wafer produced by the Jinko Solar are mainly used for internal production and processing in various downstream segments, with a small portion sold externally. We grow Jinko's market share in following 5 years (2023-2027) at 3% to reflect China's continuing dominance of wafer merchant supplying and keep it same for further future. Combining it with the projected market size, we arrive to the future sales revenue of silicon wafer.

4) Others

This business section mainly includes income from some supporting services or contracts that are not closely related with selling products. We believe that it will takes up a stable portion around 1.7% of total revenue each year. (Appendix 5)

### Capital Expenditure (CAPEX)

The recently announced 56GW vertically integrated base project in Shanxi Comprehensive Reform Demonstration Zone, with an estimated investment of 56 billion CNY, will significantly impact Jinko Solar's capital expenditure. As the project is planned to be constructed in four phases over a two-year period, it suggests a front-loaded capital expenditure profile, with substantial investments expected in the initial phases of construction. This not only implies ongoing investments in research, development, and technology advancements, potentially influencing capital expenditure in subsequent years, probably a notable increase in capital expenditures for JinkoSolar in the short to medium term. Jinko Solar forecasts at least 25 billion CNY in foreseeable expenditure plans for the next three years.

### Net Working Capital (NWC)

Jinko Solar exhibits a inventory turnover rate that is about 35% lower compared to its comparable peers. This variance can be attributed to the Company's distinctive operating characteristics, primarily the higher proportion of overseas revenue in contrast to comparable listed companies within the same industry. The elevated overseas asset turnover rate contributes to a moderated overall inventory turnover rate, aligning with the global dynamics of Jinko Solar's operations.

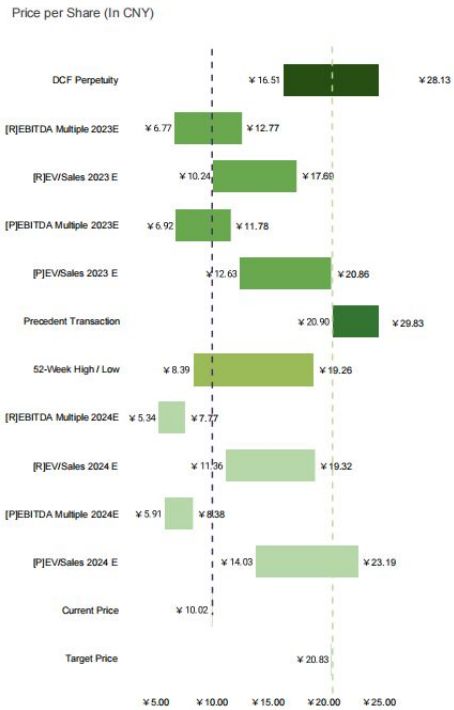
### Weighted Average Cost of Capital (WACC)

We arrived at a WACC of 10.50% for Jinko Solar (Exhibit 26). Considering that Jinko Solar is listed in Shanghai and mainly operated in CNY, we use the Chinese 10-year CNY government bond yield and subtract the default spread of China from it to get the risk free rate of 1.98%. To reflect the global revenue and operation of Jinko Solar, we use the revenue-based Lambda approach. We calculated Lambda as the relative international revenue percentage for Jinko Solar to measure the relative exposure of it to country risk premium (CRP). After calculating levered Beta of Jinko Solar based on the industry average and its leverage ratio, we get the final cost of equity of 11.81%. The complete methodologies and assumptions are shown in the Appendix 7.

### Terminal Growth and Value

We weight the long-term nominal GDP growth rate based on 1) the global revenue breakdown of Jinko Solar for recent years and 2) the expected global expansion for Jinko Solar get the terminal growth rate of 2.77% (Exhibit 27). There is potential upside for further growth considering the growing demand for the solar energy over next decades as well as Jinko Solar's competitive advantage in the global market, which will lead to a higher terminal value.

**Exhibit 29: Football Field**




*Source: Team Analysis*

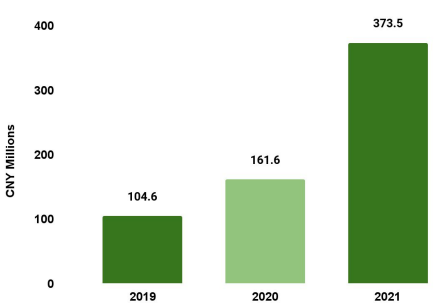
Notes:
* [R]: assign weights according to LTM revenue breakdown by product
* [P]: assign weights according to FY 2023E production capacity by product

**Exhibit 30: Precedent Transactions Valuation**

| LTM (June 30th 2023) | Equity Value (CNY in millions) | Price per Share (CNY) |
|---|---|---|
| From EV/Revenue | 333,595.6 | 29.8 |
| From EV/EBITDA | 260,578.8 | 23.3 |
| From EV/EBIT | 233,695.8 | 20.9 |
| From EV/Earnings | 168,001.3 | 15.0 |

*Source: Team Analysis*

**Exhibit 31: Investments in Pollution Prevention & Control**




*Source: Jinko Solar Financial Filings (FY 2019 - FY 2021)*

### Sensitivity Analysis

Our analysis of the DCF model's robustness reveals sensitivity to key inputs, particularly the WACC and terminal growth rate, influencing valuation. In all scenarios, a BUY recommendation is implied, which means all target prices are higher than the current of CNY 10.02. Notably, the global renewable momentum and significant capital commitments suggest potential upside in terminal growth. For detailed insights, refer to Appendix 9.

## The Comparable Company Valuation Method and Precedent Transactions

### Company Selection

Jinko Solar has its main business in three sectors: PV Modules, PV Cells, and Silicon Wafer, we select comps based on the product classification. Because companies in the PV industry have a trend to develop their business to be all-around company, a lot of the companies have products in all the three sectors which Jinko Solar is in. Therefore, there can be overlaps in the companies selection among the three sectors. Detailed explanation will be provided in the below paragraphs.

### PV Modules:

PV Module is the Company's largest sector in terms of revenue. In LTM as of June 30th 2023, the PV Module business contributed to 89% of the Company's total revenue. We selected 6 comparable companies in the PV industry and those companies all have their PV Module business contributing more than 70% of their revenue. The comps are JA Solar Technology Co., Ltd. (SZSE:002459), Canadian Solar Inc. (NASDAQ:CSIQ), Trina Solar Co., Ltd. (SHA:688599), Risen Energy Co., Ltd. (SHE:300118), LONGi Green Energy Technology Co., Ltd. (SHSE:601012). In addition to their revenue composition, the selected comparable companies have similar PV Module production capacities.

### PV Cells:

Compared to PV Modules, the PV Cells business contributes less to the Company's total revenue. However, Jinko Solar is becoming a more integrated company in the PV industry, the Company has new PV Cells products published, and it is also enlarging its production capacity. We believe it is necessary to take the PV Cells business into consideration.

Therefore, we select comparable companies in this sector, they are Tongwei Co., Ltd. (SHA:600438), Shanghai Aiko Solar Energy Co., Ltd. (SHA:600732), JA Solar Technology Co., Ltd. (SZSE:002459), Trina Solar Co., Ltd. (SHA: 688599). JA Solar Technology Co., Ltd. (SZSE:002459) is also in the PV Modules sector because JA Solar Technology Co., Ltd. focus on modules, cells, and silicon wafer. PV Modules count for approximately 50% of the total production capacity, Cells and Silicon Wafer count for the other.

### Silicon Wafer:

Silicon Wafer contributes the least to Jinko Solar's total revenue in FY 2022. But similar to the PV cells situation, the Company will increase the capacity and products in this sector as well to become an integrated and competitive company in the PV industry.

Jinko Solar's primary revenue streams consists of PV Modules, PV Cells, and Silicon Wafer are. As reported in Jinko Solar's FY 2022 annual report, PV Modules, PV Cells, and Silicon Wafer contributes 89%, 10%, and 1% to total revenue. To eliminate the influence of those minor components, we excluded silicon wafer when calculating comparable company trading multiples.

### Trading Multiples (FY 2023E)

In this comparable company analysis, we used four trading multiples for FY 2023E to calculate Jinko Solar's price per share for FY 2023E. Jinko Solar's price per share calculated from EV/Sales, EV/EBITDA, EV/EBIT, and P/E can be found in Appendix 13 and Appendix 14. Among the four trading multiples, EV/Sales and EV/EBITDA multiples better reflect Jinko Solar's performance.

**EV/Sales** According to the financial analysis we have done for Jinko Solar, the Company had achieved a high revenue in the past few years, and will grow at a high speed. Therefore, the price range of CNY 10.2 - 17.7 (price of FY 2023E) reflects the growth of Jinko Solar well.

**EV/EBITDA** EV/EBITDA can eliminate the influence of depreciation and amortization. Since different companies have different CAPEX structure, depreciation & amortization method, using EV/EBITDA is a way to avoid these effects. The comps weighted average overall EV/EBITDA indicates a range of CNY6.2 - 12.8 price per share for Jinko Solar (price of FY 2023E).

**P/E** P/E multiples of 9.4x in FY 2023E indicates that the overall comps set is worth buying. Jinko Solar has a relatively low net income, but the situation is expected to improve over the next 10 years. Therefore, we believe the CNY 5.7 price per share in FY 2023E does not reflect Jinko Solar's potential.

Reassigning the weights by production capacity can lead to higher prices per share of Jinko Solar. According to the reported plan of Jinko Solar, the Company will achieve capacity of 75GW, 75GW, and 90GW in its PV Cells, Silicon Wafer, and PV Modules production, by which we assign the weights 31.2%, 31.2%, and 37.5% to the three sectors respectively. This methods leads to a higher price per share range. The lower bound of 1.1x and 0.9x EV/Sales multiple suggests Jinko Solar's price per share of CNY 12.6 in FY 2023E, and CNY 14.0 in FY 2024E.

# Environmental, Social & Governance

**Exhibit 32: ESG Rating for Comparable Companies FY 2022**

| Ticker | Company | ESG Rating |
|---|---|---|
| SH600438 | Tongwei Co. Ltd | A |
| SH601012 | Longi Green Energy Co. Ltd | A |
| SH600089 | TBEA Co. Ltd | A |
| SH688599 | Trina Solar Co. Ltd | BBB |
| **SH688223** | **Jinko Solar Co. Ltd** | **A** |
| SZ300274 | Sungrow Power Supply Co. Ltd | BBB |
| SH600732 | Shanghai Aiko Solar Co. Ltd | A |
| SZ002459 | JA Solar Technology Co. Ltd | A |
| SZ002129 | TCL Zhonghuan Semiconductor Co. Ltd | A |
| SH688303 | Daquan Energy Co. Ltd | A |

*Source: Wind Financial Terminal - ESG Ratings PV & Semiconductors*

With the establishment of COP26 and increasing demand for ESG business practices globally, it is important to examine Jinko Solar's ESG profile. As a company within the photovoltaic industry providing solar cell and module products, Jinko Solar's entire business model aligns strongly with the environmental category within ESG. In 2023, the Company led the mainstream photovoltaic industry in the S&P Global Corporate Sustainability Assessment (CSA) by virtue of its excellent performance in environmental, social and governance.

### Environmental

As the world's first solar company to join the RE100 (100% Renewable Energy Corporate Initiative), Jinko Solar has achieved 100% green power usage in three of its plants this year. Being committed to excellence in corporate governance, transparency and accountability, the Company joined the United Nations Global Compact and implemented ESG practices throughout its business. In FY 2021, Jinko Solar also joined the Science-Based Carbon Targeting Initiative (SBTi), committing to net scientific emission reduction targets to achieve "net zero emissions" by FY 2050. Jinko Solar scored 52 out of 100 for the Environment Pillar, with emissions, resource use and innovation receiving a score of 31, 71 and 55 respectively (Refinitiv). Further, Jinko Solar's ESG rating by MSCI stands at a B. Despite the relatively low score, majority of companies within this industry (23%) are rated B as well, showcasing that Jinko Solar is not a laggard (MSCI). Our analysis suggests that these scores reflect strongly of Jinko Solar's ESG friendly business practices. According to Wind Financial Terminal ESG Ratings, Jinko Solar got an overall rating of A for ESG standards, putting them at the top 12.5% of companies within the industry (Exhibit 32). Further, the firm achieved a ESG disclosure score of 55.32 (out of a 100) on Bloomberg as well as a score of 74 (out of 100) by S&P Global. With the Company's mission to make sustainable energy available for all, we strongly believe that the Company is holding itself accountable and responsible for global sustainability initiatives. Additionally, our analysis illustrated Jinko Solar's commitment to a sustainable future environmentally. This exponential trend in environmental commitment is also applicable to the amount of hazardous waste generated by the firm. Jinko Solar's efficient waste management has allowed them to decrease waste generated from 24099 tons in FY 2019 to 18853 tons in FY 2021. Furthermore, the firm has excelled in ensuring pollution accidents do not occur, with 0 pollution accidents recorded from FY 2019 to FY 2021.

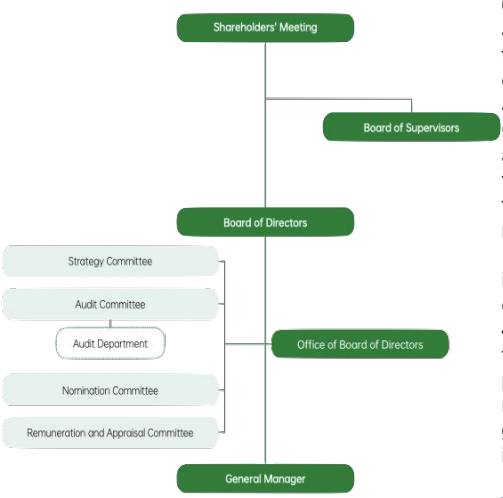
### Social

According to their annual report, Jinko Solar emphasized the importance of creating "a diversified and inclusive workforce", that the Company respects and values every employee and gives them fair opportunities and treatment based on their corporate culture of 'fair responsibility'. This is reflected in their company data, with more than 30,000 employees across 12 factories and 35 branches globally. With an immense global workforce, the firm still has a localization rate of over 80% of its overseas employees, with mainly local employees taking up middle and senior leadership positions. Based off Refinitiv scores, Jinko Solar obtained a score of 77 for their Social pillar, with Human Rights, Product Responsibility, Workforce and Community aspects scoring 74, 71, 87 and 76 respectively. We believe that these scores accurately reflect Jinko Solar's commitment to an ever more inclusive and diversified workforce.

### Governance

Jinko Solar's management has provided strong leadership, with a sound and comprehensive governance system. Jinko's extensive board of directors includes strong leadership experience across 6 directors, including 3 independent directors. Mr. Xiande Li, chairman and chief executive director of Jinko Solar, holds rich operating and management experience in the renewable energy space prior to founding the Company. Under his leadership, Jinko Solar created an ESG committee, addressing the environmental footprint with a clear reporting structure to the board. Indicative of strong governance, Jinko Solar won the Harvard Business Review ESG Innovator Award in 2022, reflecting the Company's commitment to a transparent and diverse corporate structure. Additionally, Jinko Solar held a 32.2 ESG risk rating from Morningstar's Sustainalytics framework, ranking lower (more protected) than other leading solar PV firms including JA Solar (37.1) and Canadian Solar (37.0). Morningstar's framework measures relative industry risk exposure for a target company, hence indicating ESG management at Jinko Solar is above industry average. The Company discloses all Global Reporting Initiative (GRI) governance disclosures clearly in their report with strong clarity. Last year, Jinko Solar invested > CNY 100 million in production safety and occupational health. Strong investments in employee training continues, reaching just under 5000 production safety sessions for Jinko Solar's 46.5 thousand employees. Robust patent management continues, with 311 granted in 2022, bringing the total amount of granted patent applications for Jinko Solar to 1,464 (Exhibit 34). The amount of patent applications more than doubled that of 2021, supporting China's placement as the 1st ranked module enterprise patenter (Source: Jinko Solar ESG Report 2022). We believe the diligent patent governance system at Jinko Solar contributes to both its competitive value-add and organizational impact on the firm's surrounding environments.

**Exhibit 33: Corporate Governance Structure**




*Source: Jinko Solar ESG Report FY 2022*

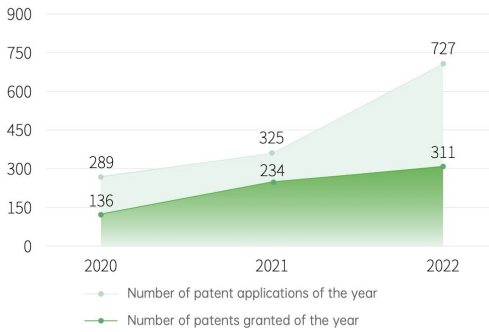
# Investment Risks

### Company Risks

**(1)** Effects of Being a Pure-Player

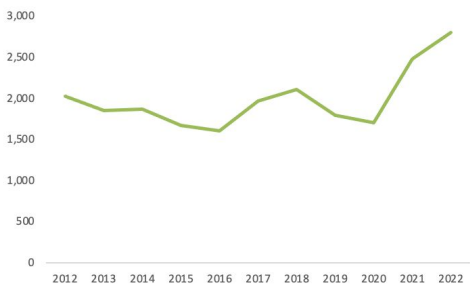
Jinko Solar's position as a pure-play solar module/panel manufacturer can potentially lead to challenges and financial instability as it is necessary for JinkoSolar to continuously invest in the research and development of its solar wafers to keep up with the rapid changes within the solar panel industry.

**Exhibit 34: Intellectual Property Management Data**



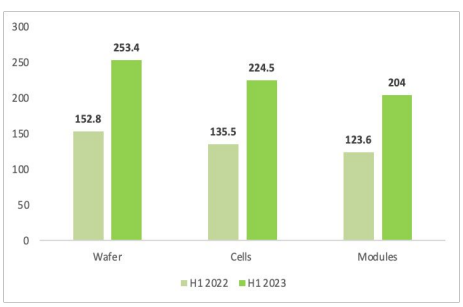

*Source: Jinko Solar ESG Report FY 2022*

**Exhibit 35: Average Price Changes in Aluminum (2012-2022)**




*Source: Trading Economics*

**Exhibit 36: Solar PV Production in China H1 2023 vs H2 2022**




*Source: Jinko Solar FY 2022 Annual Reports*

**Exhibit 37: Global Solar Firms by Market Cap as of 2023**

*Source: Bloomberg*

Failure to keep up could result in losing market share to fellow competitors.

**(2)** Supply Chain Overcapacity/Inventory Imbalance
Jinko Solar's overcapacity due to the overproduction of solar wafers has been a sentiment within the Chinese market for its future outlook. Due to the huge surge in demand in 2H of 2022 and 1H of 2023 (Exhibit 36), fears of overproduction could potentially affect Jinko's balance sheets as inventory & accrued liabilities increase. This could cause a strain on the Company's finances as cash flow has already been volatile in recent years. Jinko Solar's inventory also consists mainly of raw materials and inventory commodities. If the current market environment undergoes a sudden change or a decline in the Company's management level, the result could be inventory decline risk. This leads to the holding of products that could have less value in its inventory, tying up capital and markdown of current value.

## Industry Risks

**(1)** Market Competition
The market competition within the photovoltaic industry is steep for Jinko Solar. Though Jinko Solar has dominance within the APAC sector, competitors such as Canadian Solar and First Solar have captured the market share outside of APAC. This could impact Jinko Solar's first mover advantage within the foreign markets. Though solar power in China leads the world in growth rate by 38%, Jinko Solar is missing out on potential emerging markets for solar: Europe (17%) and United States (15%).

**(2)** Short-Term Demand Fluctuations
The short-term demand fluctuations due to increasing inflation and geopolitical unrest may contribute to a decrease in demand for solar panel technology within the short-term future. While consumer spending has increased in the past year, the shortage in supply for consumer electronics that requires semiconductors which in turns needs solar wafers may prove to have an effect on the prices for electronics which in turn causes a lower demand for the semiconductors that power them.

**(3)** Price Fluctuations
The price fluctuations that Jinko Solar may experience would be within the commodity price range. The cost of key raw materials that are used within solar panel manufacturing (silicon, glass, aluminum) are all subject to price changes within the global commodities market. Changes in prices for these commodities could have a direct impact on the cost of solar panels which in turn affects Jinko Solar's profitability. Price fluctuations could also be spurred from the competitive pricing nature of the solar industry itself. This would also be another factor that could have an impact on the cost of solar panels.

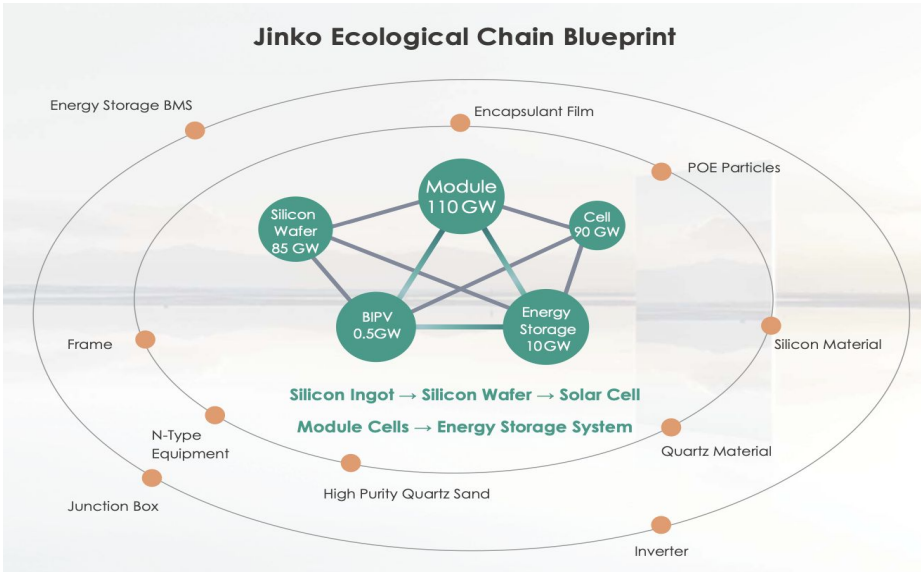
## Regulatory & Legal

**(1)** Geopolitical Risk
Within the last year, Jinko Solar was subject to raids by the U.S. Department of Homeland Security. Due to the Uyghur Forced Labor Protection Act, Jinko and other Chinese silicon wafer production companies have experienced detainment due to the banning of imports from China's Xinjiang region. A risk of geopolitical tension between the United States and China could cut a portion into Jinko Holdings' total revenue within the future due to its affect on 1) Trade Restrictions, 2) Supply Chain Disruption, 3) Capital Constraints, and 4) Market Expansion. The geopolitical risks that trade restrictions can have for Jinko Solar could impact its access to solar cells/modules from the United States. Due to this, this could result in higher costs of production and reduce its competitiveness in the U.S. market. Geopolitical risks between the United States and China could also affect the supply chains between both countries resulting in the loss of crucial exports and imports such as solar cells/modules, US manufactured equipment and machinery, and raw materials (silicon, glass, materials). The access to capital can also be greatly affected by geopolitical risks between the United States and China. If geopolitical tensions worsen, there may be difficulty for Jinko Solar to raise capital in the American markets from foreign investors as well as expand to the American markets which results in a reduction in its revenue.

**(2)** Trade & Tariffs
Being a company based in China, Jinko Holdings is a subject to potential trade disputes and tariffs imposed by other countries such as the United States and the European Union. Future changes in trade policies and tariffs could have an impact on Jinko's exports to those markets which could result in a reduction to their revenue growth. Tariffs on its imports to the United States could result in a more expensive product to the heavy tax. Due to this, they would lose the competitiveness within that market.

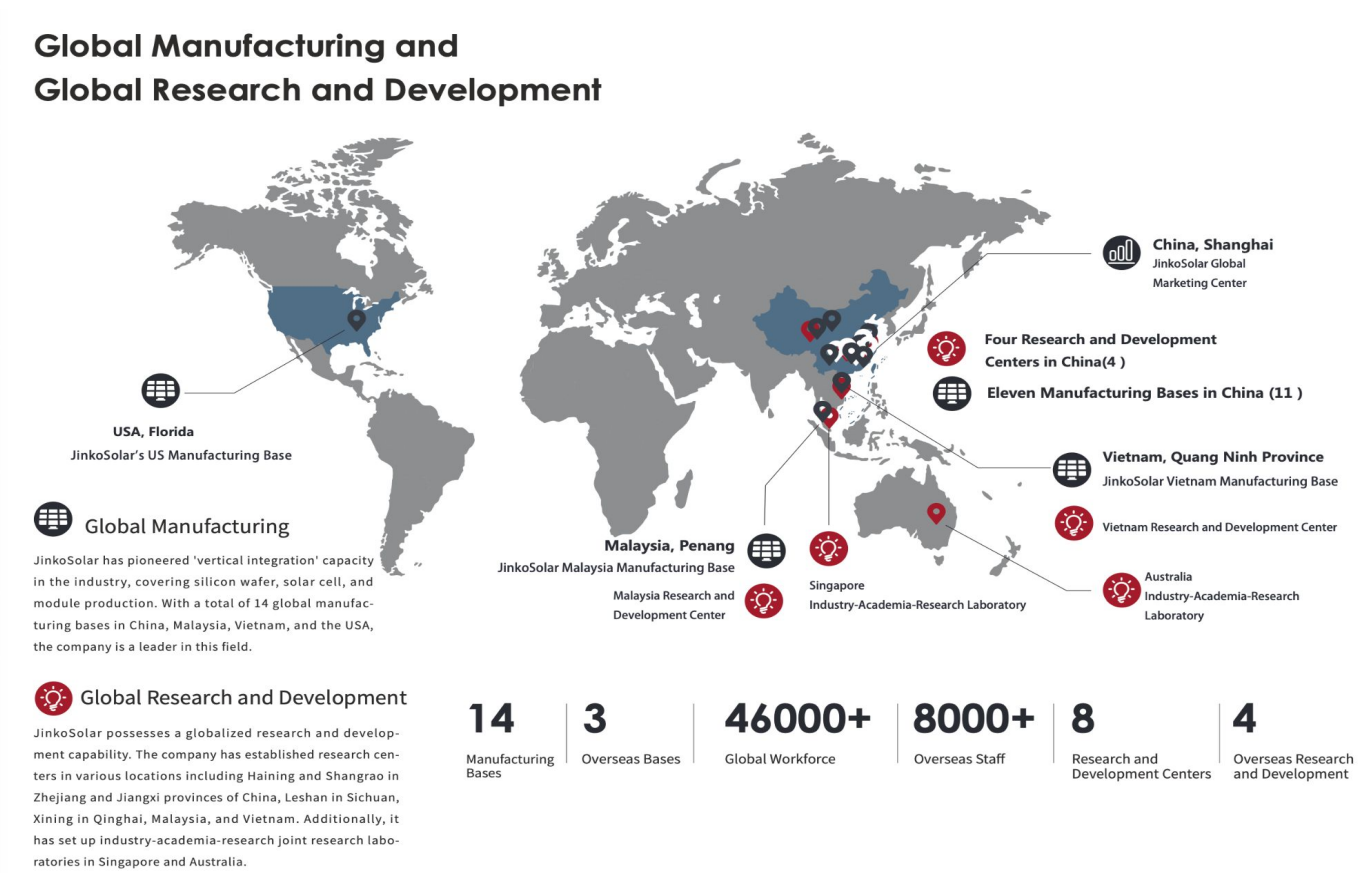
**(3)** Change in Policies
The various policies that may affect Jinko Solar not only include labor & employment laws but also energy, product safety & quality policies. The ensurement that solar panels and related products meet safety and quality standards are crucial to Jinko Solar's success as a company. Failure to meet requirements could result in regulatory penalties and liability claims. The same applies to both energy and labor policies. Jinko Solar has already implemented a 52 step program that focuses on quality control and inspection process. The process has continuous line monitoring and video/photo record for each cell and panel. With an installation of a QC information management system in place to allow quality data flow constantly, an intelligent alarm is in place to stop the mechanism in case of any errors.

## Appendix 1: Product Ecosystem




*Source: Jinko Solar Investor Relations*

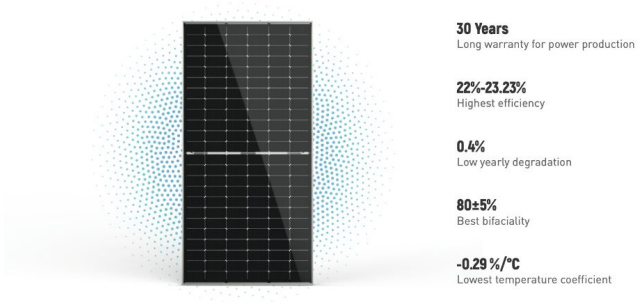
## Appendix 2: Global Asset Map




*Source: Jinko Solar Investor Relations*

## Appendix 3: Solar Module White Paper

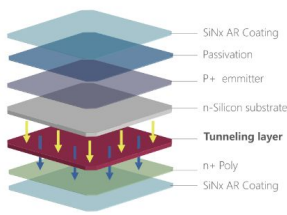
Best Advantage of N-Type Solar Panels




Highest Average Cell Efficiency of Jinkosolar's N-type TOPCon Cell:

**> 25.1%**

N-type TOPCon cell can achieve even 28.2-28.7% thematically while Jinkosolar mass-produced N-type TOPCon cell with 25.1% efficiency.




*Source: Jinko Solar Investor Relations*

Highest Average Module Efficiency of Jinkosolar's N-type TOPCon Panel: **>22%**

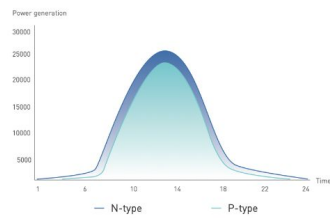
Jinkoolar N-type TOPCon Tiger Neo panels have the best efficiency in serial production, scoping between 22%-23.23%. N-type Tiger Neo module has the best generation performance and reliable characteristic resistance for common fail from all over solar technology

More Power Productivity per Watt

Higher power, bifaciality, efficient production under extreme conditions, combined with the lower degradation, no LID and LeTID effects and a glass-glass structure of Jinkosolar's N-type Tiger Neo allows you to generate significantly more power per watt (kWh/kW) over 30 years of use compared to PERC panels.

Longer Generation Time of Tiger Neo

Jinkosolar's N-type TOPCon Tiger Neo panels demonstrate better power generation characteristics than conventional P-type modules under low light condition. Therefore, the effective power generation time of Tiger Neo is 11.07% more than that of conventional solar modules




## Appendix 4: Range of Solar Module Products

| Series Type | Description |
|---|---|
| Cheetah Series | These modules are known for their high efficiency and power output. The Cheetah series includes both monofacial and bifacial modules. |
| Tiger Series | The Tiger series modules are known for their industry leading efficiency and are designed for utility-scale solar installations |
| Swan Series | These are bifacial modules that can capture sunlight from both the front and rear sides, increasing energy yield |
| Eagle Series | The Eagle series offers a wide range of standard, high-efficiency modules for various applications |
| N-Type Monocrystalline Modules | These modules use N-type monocrystalline cells for high efficiency and reliability |
| P-Type Monocrystalline Modules | The P-type monocrystalline modules are designed for performance and reliability |

*Source: Jinko Solar Brand Whitepaper*

## Appendix 5: Revenue Projections

| Revenue Projection (In CNY mililons)<br>Jinko Solar<br>Period | FY 2022A | FY 2023E | FY 2024E | FY 2025E | FY 2026E | FY 2027E | FY 2028E | FY 2029E | FY 2030E | FY 2031E | FY 2032E | Sources | FY 2023 - 2032 CAGR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Modules Production Capacity (GW) | 70.0 | 110.0 | 141.3 | 161.1 | 181.2 | 204.0 | 212.3 | 217.9 | 223.6 | 229.4 | 235.4 | ①⑥ | |
| Total Cells Production Capacity (GW) | 55.0 | 90.0 | 97.4 | 105.4 | 114.0 | 123.3 | 127.0 | 130.2 | 133.5 | 136.8 | 140.2 | ①⑥ | |
| **Photovoltaic (PV) Module** | | | | | | | | | | | | | |
| **PV Module Global:** | | | | | | | | | | | | | |
| Jinko Solar's Production Capacity (GW) | 42.2 | 65.0 | 82.2 | 92.9 | 102.5 | 113.0 | 118.6 | 121.8 | 125.1 | 128.5 | 131.9 | ①⑥ | |
| Global Production Capacity (GW) | 683 | 866 | 1,043.0 | 1,123.0 | 1,179.2 | 1,238.1 | 1,300.0 | 1,335.1 | 1,371.2 | 1,408.2 | 1,446.2 | ④⑥ | |
| Jinko Solar/Global Production Capacity (%) | 6.2% | 7.5% | 7.9% | 8.3% | 8.7% | 9.1% | 9.1% | 9.1% | 9.1% | 9.1% | 9.1% | | |
| Revenue/Company Production Capacity | 1,140.0 | 1,174.2 | 1,209.5 | 1,245.8 | 1,283.1 | 1,321.6 | 1,321.6 | 1,321.6 | 1,321.6 | 1,321.6 | 1,321.6 | | |
| **Revenue** | 48,062.6 | 76,326.0 | 99,418.1 | 115,767.7 | 131,462.9 | 149,286.0 | 156,750.3 | 160,982.6 | 165,329.1 | 169,793.0 | 174,377.4 | ①⑥ | 8.6% |
| **PV Modules Domestic:** | | | | | | | | | | | | | |
| Jinko Solar's Production Capacity (GW) | 27.8 | 45.0 | 59.06 | 68.22 | 78.79 | 91.00 | 93.73 | 96.08 | 98.48 | 100.94 | 103.46 | ①⑥ | |
| Global Production Capacity (GW) | 551.9 | 689.9 | 862.3 | 948.6 | 1,043.4 | 1,147.8 | 1,182.2 | 1211.8 | 1242.1 | 1273.1 | 1304.9 | ②⑥ | |
| Jinko Solar/Global Production Capacity (%) | 5.0% | 6.5% | 6.8% | 7.2% | 7.6% | 7.9% | 7.9% | 7.9% | 7.9% | 7.9% | 7.9% | | |
| Revenue/Company Production Capacity | 1,140.0 | 1,162.8 | 1,186.1 | 1,209.8 | 1,234.0 | 1,271.0 | 1,271.0 | 1,271.0 | 1,271.0 | 1,271.0 | 1,271.0 | | |
| **Revenue** | 31,740.5 | 52,328.1 | 70,054.2 | 82,530.9 | 97,229.6 | 115,669.2 | 119,139.3 | 122,117.8 | 125,170.7 | 128,300.0 | 131,507.5 | ①⑥ | 9.7% |
| **Photovoltaic (PV) Cell** | | | | | | | | | | | | | |
| **PV Cells Global:** | | | | | | | | | | | | | |
| Jinko Solar's Production Capacity (GW) | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | ①⑥ | |
| Global Production Capacity (GW) | 583.1 | 843.0 | 1,126.0 | 1,238.0 | 1,255.0 | 1,267.6 | 1,280.2 | 1,293.0 | 1,306.0 | 1,319.0 | 1,332.2 | ③⑥ | |
| Jinko Solar/Global Production Capacity (%) | 0.02% | 0.03% | 0.03% | 0.03% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | | |
| Revenue/Company Production Capacity | 18.6 | 19.0 | 19.4 | 19.8 | 20.2 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | | |
| **Revenue** | 3.0 | 4.2 | 6.3 | 7.8 | 8.9 | 10.0 | 10.4 | 10.9 | 11.3 | 11.4 | 11.5 | ①⑥ | 10.6% |
| **PV Cells Domestic:** | | | | | | | | | | | | | |
| Jinko Solar's Production Capacity (GW) | 54.8 | 89.8 | 97.10 | 105.01 | 113.57 | 122.82 | 126.51 | 129.67 | 132.91 | 136.23 | 139.64 | ①⑥ | |
| Global Production Capacity (GW) | 505.5 | 707.7 | 728.9 | 750.8 | 773.3 | 796.5 | 820.4 | 840.9 | 862.0 | 883.5 | 905.6 | ③⑥ | |
| Jinko Solar/Global Production Capacity (%) | 10.8% | 12.7% | 13.3% | 14.0% | 14.7% | 15.4% | 15.4% | 15.4% | 15.4% | 15.4% | 15.4% | | |
| Revenue/Company Production Capacity | 18.6 | 19.0 | 19.4 | 19.8 | 20.2 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | | |
| **Revenue** | 1,021.0 | 1,705.1 | 1,880.9 | 2,074.9 | 2,288.9 | 2,524.9 | 2,600.7 | 2,665.7 | 2,732.4 | 2,800.7 | 2,870.7 | ①⑥ | 5.3% |
| **Silicon Wafer** | | | | | | | | | | | | | |
| **Silicon Wafer:** | | | | | | | | | | | | | |
| Domestic Market Size (In Millions) | 13,828.0 | 16,485.0 | 19,782.0 | 21,760.2 | 23,936.2 | 26,329.8 | 27,119.7 | 27,933.3 | 28,771.3 | 29,634.5 | 30,523.5 | ①⑤ | |
| Jinko Market Share | 3.4% | 3.5% | 3.5% | 3.6% | 3.8% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | | |
| **Revenue** | 466.2 | 572.5 | 700.7 | 793.9 | 899.5 | 1,053.2 | 1,084.8 | 1,117.3 | 1,150.9 | 1,185.4 | 1,220.9 | ①⑥ | 7.9% |
| **Others** | | | | | | | | | | | | | |
| **Others:** | | | | | | | | | | | | | |
| % of Rev | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | | |
| **Revenue** | 1,382.6 | 2,227.0 | 2,926.4 | 3,421.6 | 3,944.0 | 4,567.4 | 4,755.2 | 4,879.5 | 5,007.0 | 5,137.9 | 5272.3 | ①⑥ | 9.0% |
| **Total Revenue** | **82,676.1** | **133,162.8** | **174,986.7** | **204,596.7** | **235,833.7** | **273,110.8** | **284,340.7** | **291,773.7** | **299,401.4** | **307,228.4** | **315260.3** | ①⑥ | 9.0% |
| Growth Rate | 103.8% | 61.1% | 31.4% | 16.9% | 15.3% | 15.8% | 4.1% | 2.6% | 2.6% | 2.6% | 2.6% | | |

*Source:*
*① Jinko Solar Annual Reports*
*② China Photovoltaic Industry Association (CPIA)*
*③ Silicon Industry of China Nonferrous Metals Industry Association*
*④ Clean Energy Associates (CEA)*
*⑤ ASKCI Consulting*
*⑥ Team Projections*

We believe that with the continuous improvement of the photovoltaic industry and the continuous increase of China's global photovoltaic related production capacity, Jinko Solar's revenue will also continue to increase.

We have adopted a top-down approach to predict the Jinko Solar's Production Capacity(GW) over global and domestic ones in the next decade based on global and domestic forecasts of future photovoltaic production capacity (GW) and the Company's existing effective production capacity. According to Jinko Solar's product division, only photovoltaic modules and cells have international sales, so we used revenue-weighted production capacity to combine market share forecasts to better determine future production capacity.

We further the model based on historic Revenue/Company Production Capacity and used it to arrive at our projected revenue. We believe the Revenue/Company Production Capacity will increase due to the product competitiveness and price premium of Jinko Solar in the future, and to arrive at our expected revenue.

## Appendix 6: The Financial Statements

| Jinko Solar Income Statement (in CNY millions) | Actuals | | | 2023-6-30 | Estimates | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period Ending December 31** | **FY 2020A** | **FY 2021A** | **FY 2022A** | **LTM** | **FY 2023E** | **FY 2024E** | **FY 2025E** | **FY 2026E** | **FY 2027E** | **FY 2028E** | **FY 2029E** | **FY 2030E** | **FY 2031E** | **FY 2032E** |
| **Revenue** | **33,659.6** | **40,569.6** | **82,676.1** | **102,893.0** | **133,162.8** | **174,986.7** | **204,596.7** | **235,833.7** | **273,110.8** | **284,340.7** | **291,773.7** | **299,401.4** | **307,228.4** | **315,260.3** |
| Operating Cost | 28,629.3 | 35,135.0 | 74,036.9 | 89,540.3 | 115,851.6 | 152,238.4 | 177,999.2 | 200,458.7 | 229,413.1 | 237,424.5 | 237,795.6 | 239,521.1 | 242,710.4 | 245,903.0 |
| **Gross profit** | **5,030.2** | **5,434.6** | **8,639.2** | **13,352.7** | **17,311.2** | **22,748.3** | **26,597.6** | **35,375.1** | **43,697.7** | **46,916.2** | **53,978.1** | **59,880.3** | **64,518.0** | **69,357.3** |
| Operating expenses: | | | | | | | | | | | | | | |
| R&D Expenses | 705.7 | 716.2 | 1,199.4 | 1,500.1 | 2,663.3 | 3,499.7 | 4,091.9 | 4,716.7 | 5,462.2 | 5,686.8 | 5,835.5 | 5,988.0 | 6,144.6 | 6,305.2 |
| Sales Expenses | 895.2 | 890.8 | 2,165.9 | 2,605.7 | 3,318.0 | 4,360.1 | 5,097.8 | 5,876.2 | 6,805.0 | 6,966.3 | 7,148.5 | 7,335.3 | 7,527.1 | 7,723.9 |
| Administrative Expenses | 841.5 | 1,133.4 | 1,914.1 | 2,125.4 | 3,318.0 | 5,249.6 | 5,524.1 | 6,367.5 | 7,237.4 | 7,535.0 | 7,586.1 | 7,485.0 | 7,527.1 | 7,408.6 |
| Tax and Surcharges | 98.7 | 119.1 | 218.2 | 315.5 | 377.7 | 496.3 | 580.3 | 668.8 | 774.6 | 806.4 | 827.5 | 849.1 | 871.3 | 894.1 |
| **Total Other Operating Expenses** | 2,541.0 | 2,859.5 | 5,497.5 | 6,546.7 | 9,676.8 | 13,605.7 | 15,294.1 | 17,629.2 | 20,279.2 | 20,994.6 | 21,397.5 | 21,657.5 | 22,070.1 | 22,331.8 |
| Non-operating Expenses | 787.8 | 552.2 | -744.3 | -844.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| EBITDA | 3,123.6 | 3,877.1 | 6,982.6 | 13,441.5 | 9,457.5 | 11,242.4 | 13,349.4 | 20,575.9 | 26,695.9 | 31,039.7 | 37,832.5 | 44,510.2 | 49,821.4 | 54,591.7 |
| EBIT | 1,701.4 | 2,022.9 | 3,886.0 | 7,650.6 | 7,634.3 | 9,142.6 | 11,303.4 | 17,745.9 | 23,418.5 | 25,921.6 | 32,580.6 | 38,222.8 | 42,447.9 | 47,025.5 |
| Net Interest Expense | -519.8 | -662.9 | -759.0 | -716.8 | 273.3 | 130.5 | 81.4 | 108.0 | 234.4 | 441.3 | 754.4 | 1,182.8 | 1,635.2 | 2,146.2 |
| Income Tax Expense | 139.1 | 218.6 | 190.8 | 1,059.8 | 1,186.1 | 1,391.0 | 1,707.7 | 2,678.1 | 3,547.9 | 3,954.4 | 5,000.3 | 5,910.8 | 6,612.5 | 7,375.7 |
| **Net income** | **1,042.5** | **1,141.4** | **2,936.2** | **5,874.0** | **6,721.5** | **7,882.1** | **9,677.1** | **15,175.8** | **20,105.0** | **22,408.5** | **28,334.8** | **33,494.8** | **37,470.6** | **41,795.9** |
| **Comprehensive Income to Equity shareholders** | **894.5** | **1,042.8** | **3,228.6** | **6,153.7** | **6,721.5** | **7,882.1** | **9,677.1** | **15,175.8** | **20,105.0** | **22,408.5** | **28,334.8** | **33,494.8** | **37,470.6** | **41,795.9** |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

| Jinko Solar Balance Sheet (in CNY millions) | Actuals | | | 2023-6-30 | Estimates | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period Ending December 31** | **FY 2020A** | **FY 2021A** | **FY 2022A** | **LTM** | **FY 2023E** | **FY 2024E** | **FY 2025E** | **FY 2026E** | **FY 2027E** | **FY 2028E** | **FY 2029E** | **FY 2030E** | **FY 2031E** | **FY 2032E** |
| **Assets** | | | | | | | | | | | | | | |
| **Current assets:** | | | | | | | | | | | | | | |
| Cash and cash equivalents | 16,028.7 | 18,408.8 | 19,985.4 | 95,997.4 | 14,019.7 | 11,985.1 | 11,271.6 | 13,473.2 | 18,354.3 | 25,062.0 | 35,897.7 | 49,061.7 | 61,238.3 | 77,690.20 |
| Marketable securities | 1,072.1 | 2,006.3 | 3,628.9 | 16,019.6 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.9 | 3,628.90 |
| Inventories | 8,362.9 | 13,250.1 | 17,450.3 | 75,185.4 | 33,790.1 | 44,402.9 | 50,927.5 | 58,467.1 | 68,186.7 | 67,929.8 | 68,036.0 | 68,529.7 | 74,161.5 | 78,552.40 |
| Accounts receivable, net and other | 9,039.4 | 14,011.6 | 26,182.2 | 111,046.0 | 36,989.7 | 46,177.0 | 53,990.8 | 62,233.9 | 70,553.6 | 75,034.4 | 80,237.8 | 86,493.7 | 87,901.5 | 87,572.30 |
| **Total current assets** | **34,503.1** | **47,676.7** | **67,246.9** | **298,248.4** | **88,428.3** | **106,193.9** | **119,818.9** | **137,803.2** | **160,723.5** | **171,655.0** | **187,800.3** | **207,714.0** | **226,930.1** | **247,443.70** |
| Property, plant and equipment, net | 12,550.1 | 17,061.6 | 30,437.9 | 133,185.1 | 41,931.0 | 50,330.3 | 58,514.2 | 69,834.2 | 82,943.5 | 94,885.9 | 107,140.4 | 121,811.0 | 139,015.8 | 156,670.40 |
| Operating leases | 0.0 | 943.8 | 832.6 | 3,151.3 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 | 832.6 |
| Goodwill, intangible assets | 796.1 | 1,145.5 | 1,511.0 | 2,342.4 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.0 | 1,511.00 |
| Other assets | 2,685.3 | 6,040.9 | 5,611.1 | 15,895.6 | 5,233.4 | 4,737.1 | 4,156.9 | 3,488.0 | 2,713.5 | 1,907.1 | 1,079.6 | 230.4 | -640.9 | -1,535.00 |
| **Total assets** | **50,534.6** | **72,868.6** | **105,639.4** | **452,822.7** | **137,936.3** | **163,605.0** | **184,833.6** | **213,469.1** | **248,724.2** | **270,791.6** | **298,363.9** | **332,099.1** | **367,648.7** | **404,922.80** |
| **Liabilities** | | | | | | | | | | | | | | |
| **Current liabilities:** | | | | | | | | | | | | | | |
| Accounts payable | 7,244.1 | 11,447.8 | 16,066.7 | 66,294.6 | 29,637.2 | 38,945.7 | 42,027.6 | 49,001.0 | 57,353.3 | 57,377.6 | 56,146.2 | 55,888.3 | 53,935.6 | 47,814.50 |
| Notes payable | 9,334.0 | 11,988.7 | 20,623.8 | 93,204.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.8 | 20,623.80 |
| Accrued expenses and other | 4,867.7 | 9,976.6 | 13,531.3 | 39,196.6 | 25,536.1 | 34,014.2 | 42,483.7 | 48,970.0 | 55,767.8 | 55,402.4 | 55,871.4 | 56,369.7 | 56,401.3 | 58,000.70 |
| Short-term debt | 8,102.2 | 13,390.7 | 11,566.9 | 57,411.1 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.9 | 11,566.90 |
| Unearned revenue | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |
| **Total current liabilities** | **29,547.9** | **46,803.8** | **61,788.7** | **256,107.0** | **87,364.1** | **105,150.7** | **116,702.1** | **130,161.8** | **145,311.8** | **144,970.8** | **144,208.3** | **144,448.7** | **142,527.7** | **138,005.90** |
| Long-term lease liabilities | 0.0 | 615.1 | 530.7 | 1,748.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 | 530.7 |
| Long-term borrowings | 396.2 | 399.3 | 3,178.8 | 10,197.5 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.8 | 3,178.80 |
| Bonds Payable | 0.0 | 0.0 | 0.0 | 18,067.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 |
| Long-term payables | 6,975.7 | 10,259.7 | 11,698.7 | 43,562.2 | 11,698.7 | 11,698.7 | 11,698.7 | 11,698.7 | 11,698.7 | 11,698.7 | 11,698.7 | 11,698.70 | 11,698.70 | 11,698.70 |
| Other long-term liabilities | 1,100.7 | 1,236.0 | 1,752.5 | 7,883.8 | 1,752.5 | 1,752.5 | 1,752.5 | 1,752.5 | 1,752.5 | 1,752.5 | 1,752.5 | 1,752.50 | 1,752.50 | 1,752.50 |
| **Total liabilities** | **38,020.5** | **59,313.9** | **78,949.4** | **337,566.5** | **104,524.7** | **122,311.3** | **133,862.8** | **147,322.4** | **162,472.5** | **162,131.4** | **161,369.0** | **161,609.40** | **159,688.40** | **155,166.60** |
| **Stockholders' equity** | | | | | | | | | | | | | | |
| Common stock par value + additional paid- | 8,000.0 | 8,000.0 | 10,000.0 | 42,122.4 | 10,000.0 | 10,000.0 | 10,000.0 | 10,000.0 | 10,000.0 | 10,000.0 | 10,000.0 | 10,000.00 | 10,000.00 | 10,000.00 |
| Capital Reserve | 594.4 | 594.6 | 8,734.2 | 34,868.3 | 8,734.2 | 8,734.2 | 8,734.2 | 8,734.2 | 8,734.2 | 8,734.2 | 8,734.2 | 8,734.20 | 8,734.20 | 8,734.20 |
| Surplus Reserve | 19.7 | 60.7 | 185.6 | 617.5 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 | 185.6 |
| Accumulated other comprehensive income | -118.1 | -216.6 | 75.8 | 359.0 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 | 75.8 |
| Minority shareholders' interest | 5.3 | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 |
| Retained earnings | 4,012.8 | 5,113.2 | 7,694.5 | 37,289.0 | 14,416.0 | 22,298.1 | 31,975.3 | 47,151.1 | 67,256.1 | 89,664.6 | 117,999.4 | 151,494.10 | 188,964.70 | 230,760.60 |
| **Total stockholder equity** | **12,514.1** | **13,557.2** | **26,690.1** | **115,256.2** | **33,411.6** | **41,293.7** | **50,970.8** | **66,146.6** | **86,251.7** | **108,660.1** | **136,994.9** | **170,489.70** | **207,960.30** | **249,756.20** |
| **Total liabilities & stockholders' equity** | **50,534.6** | **72,868.6** | **105,639.4** | **452,822.7** | **137,936.3** | **163,605.0** | **184,833.6** | **213,469.1** | **248,724.1** | **270,791.6** | **298,363.9** | **332,099.10** | **367,648.70** | **404,922.70** |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

| Jinko Solar Cash Flow Statement (in CNY millions) | Actuals | | | 2023-6-30 | Estimates | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period Ending December 31** | **FY 2020A** | **FY 2021A** | **FY 2022A** | **LTM** | **FY 2023E** | **FY 2024E** | **FY 2025E** | **FY 2026E** | **FY 2027E** | **FY 2028E** | **FY 2029E** | **FY 2030E** | **FY 2031E** | **FY 2032E** |
| **Cash flows from operating activities** | | | | | | | | | | | | | | |
| Net income | 1,042.50 | 1,141.40 | 2,936.20 | 5,874.00 | 6,721.50 | 7,882.10 | 9,677.10 | 15,175.80 | 20,105.00 | 22,408.50 | 28,334.80 | 33,494.80 | 37,470.60 | 41,795.90 |
| Depreciation and amortization | 1,422.20 | 1,854.20 | 3,096.60 | 5,790.90 | 1,823.20 | 2,099.80 | 2,046.00 | 2,830.00 | 3,277.30 | 5,118.10 | 5,251.90 | 6,287.40 | 7,373.50 | 7,566.20 |
| Other operating expense (income), net | 98.7 | 119.1 | 218.2 | 315.5 | 377.7 | 496.3 | 580.3 | 668.8 | 774.6 | 806.4 | 827.5 | 849.1 | 871.3 | 894.1 |
| Other expense (income), net | 1,008.10 | 1,249.10 | -52.5 | -1,550.90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asset Writedown & Restructuring Costs | 283.1 | 459.6 | 918.8 | 1,656.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Changes in operating operating working capital: | | | | | | | | | | | | | | |
| (Gain)/Loss from sale of asset | 423.4 | 352.1 | 397.5 | 227.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (Gain)/Loss from sale of investment | -135.3 | -308.5 | -22.2 | -6.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Changes in inventory | -3,286.60 | -5,258.50 | -4,831.40 | -3,493.60 | -16,339.80 | -10,612.80 | -6,524.70 | -7,539.60 | -9,719.50 | 256.9 | -106.2 | -493.7 | -5,631.90 | -4,390.80 |
| Changes in accounts receivable | 2,211.70 | -8,687.50 | -13,632.90 | -2,623.40 | -10,807.40 | -9,187.40 | -7,813.80 | -8,243.10 | -8,319.70 | -4,480.70 | -5,203.40 | -6,256.00 | -1,407.70 | 329.1 |
| Changes in accounts payable | -394.3 | 2,422.80 | 11,881.30 | 1,927.60 | 13,570.50 | 9,308.50 | 3,081.90 | 6,973.40 | 8,352.30 | 24.3 | -1,231.40 | -257.9 | -1,952.60 | -6,121.20 |
| Changes in accrued expenses | 2,523.70 | 5,108.90 | 3,554.70 | 0 | 12,004.80 | 8,478.10 | 8,469.60 | 6,486.20 | 6,797.80 | -365.4 | 468.9 | 498.4 | 31.6 | 1,599.30 |
| Changes in deferred tax | -66 | 27.4 | -577.4 | -936.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Changes in other operating assets | 0 | 0 | 415.6 | 244.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net changes in working capital | 988.5 | -6,386.90 | -3,190.10 | -4,660.50 | -1,571.80 | -2,013.60 | -2,787.00 | -2,323.00 | -2,889.20 | -4,564.90 | -6,072.10 | -6,509.20 | -8,960.60 | -8,583.50 |
| **Total cash from operating activities** | **5,131.20** | **-1,519.90** | **4,302.40** | **7,425.00** | **7350.5** | **8464.7** | **9516.3** | **16351.7** | **21267.7** | **23768.1** | **28342.1** | **34122.1** | **36754.8** | **41672.7** |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

## Cont. Appendix 6: The Financial Statements

| Jinko Solar Cash Flow Statement (in CNY millions) | Actuals | | | 2023-6-30 | Estimates | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period Ending December 31** | **FY 2020A** | **FY 2021A** | **FY 2022A** | **LTM** | **FY 2023E** | **FY 2024E** | **FY 2025E** | **FY 2026E** | **FY 2027E** | **FY 2028E** | **FY 2029E** | **FY 2030E** | **FY 2031E** | **FY 2032E** |
| **Cash flows from investing activities** | | | | | | | | | | | | | | |
| CAPEX [Purchase of property and equipment] | -4,003.8 | -9,167.7 | -14,904.9 | -15,231.1 | -13,316.3 | -10,499.2 | -10,229.8 | -14,150.0 | -16,386.6 | -17,060.4 | -17,506.4 | -20,958.1 | -24,578.3 | -25,220.8 |
| Proceeds from property and equipment sales and incentives | 123.8 | 23.1 | 669.5 | 221.9 | 0.0 | | | | | | | | | |
| Business acquisitions, net of cash acquired | -13.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sales and maturities in marketable securities | 31.5 | -465.0 | -465.0 | -410.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Investing Activities | -5.1 | 417.1 | -143.6 | -285.9 | 0.0 | | | | | | | | | |
| **Total cash from investing activities** | **-3,866.8** | **-9,192.5** | **-14,844.0** | **-15,705.1** | **-13,316.3** | **-10,499.2** | **-10,229.8** | **-14,150.0** | **-16,386.6** | **-17,060.4** | **-17,506.4** | **-20,958.1** | **-24,578.3** | **-25,220.8** |
| **Cash flows from financing activities** | | | | | | | | | | | | | | |
| Long-term borrowings (repayments) | -375.9 | 6,905.0 | 3,295.0 | 34,521.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Principal repayments of finance leases | -736.4 | -1,088.1 | -2,408.5 | -23,705.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Financing Activities | 4,020.7 | -133.2 | 10,798.6 | -537.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total cash from financing activities** | **2,908.4** | **5,683.7** | **11,685.0** | **10,279.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| Foreign Currency effect on cash, cash equivalents, and restricted c | -2.9 | -33.3 | 228.0 | 326.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total change in cash and cash equivalents** | 4,169.9 | -5,062.0 | 1,371.5 | 2,324.9 | -5,965.8 | -2,034.5 | -713.5 | 2,201.6 | 4,881.1 | 6,707.7 | 10,835.7 | 13,164.0 | 12,176.5 | 16,451.9 |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

## Appendix 7A: Valuation Methodology

| Input | Value | Methodology | Sources |
|---|---|---|---|
| Risk free rate | 1.98% | Using 10-year Chinses government bond in CNY minus the Default Spread of China.We use the Chinese risk-free rate as Jinko Solar is listed in Shanghai and mainliy operated in RMB | ② |
| β (Beta) | 1.40 | Use Jinko Solar's competitors' average unlevered beta (1.23) and relevered based on Jinko Solar's financials | ② |
| Mature Equity Risk Premium (ERP) | 5.00% | Mature market Equity Risk Premium | ③ |
| Country Risk Premium (CRP) | 2.30% | Additional Country Risk Premium(CRP) using regional breakdown based on Jinko Solar's revenue | ①② |
| λ (Lambda) | 1.24 | λ measures the relative exposure of a firm to country risk.<br>λ = % of international revenue for Jinko Solar/ % of international revenue for comparable firms | ①② |
| Cost of Equity | 9.77% | CAPM Formula: E(Return)=Riskfree Rate+ Beta (Mature ERP)+ λ*(CRP) | ③ |
| Cost of Debt | 2.73% | Risk Free rate + Default Spread | ② |
| Tax Rate | 15.00% | Jinko Solar statutory tax rate | ① |
| WACC | 10.50% | WACC: Cost of Capital = Cost of Debt *(1-tax rate)*Debt Ratio + Cost of Equity *Equity Ratio | ③ |
| Terminal Growth Rate | 2.77% | Use the long-term nominal GDP growth rate and weighted based on Jinko Solar's revenue breakdown | ①④ |

## Appendix 7B: Comps Unlevered Beta

| Companies - PV Modules | Unlevered Beta |
|---|---|
| JA Solar Technology | 0.824 |
| Canadian Solar | 1.209 |
| Trina Solar | 0.794 |
| Risen Energy | 1.121 |
| LONGi Green Energy Technology | 1.191 |

*Source:*
*① Jinko Solar Annual Reports*
*② Bloomberg*
*③ New York University Stern Damodaran*
*④ International Monetary Fund*

| Companies - PV Cells | Unlevered Beta |
|---|---|
| Tongwei Co | 1.36 |
| Shanghai Aiko Solar Energy | 1.595 |
| JA Solar Technology | 0.824 |
| Trina Solar | 0.794 |
| **Companies - Silicon Wafer** | **Unlevered Beta** |
| TCL Zhonghuan Renewable Energy Tecl | 1.156 |
| Hoyuan Green Energy | 1.761 |
| Shuangliang Eco-energy Systems | 1.363 |
| Tongwei | 1.36 |
| LONGi Green Energy Technology Co. | 1.191 |
| **Unlevered Beta of Comps** | **1.23** |

## Appendix 8: Discounted Cash Flow Analysis

| For Fiscal Year Ending December (In CNY mililons) | 2023-6-30 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period** | **LTM** | **FY 2023E** | **FY 2024E** | **FY 2025E** | **FY 2026E** | **FY 2027E** | **FY 2028E** | **FY 2029E** | **FY 2030E** | **FY 2031E** | **FY 2032E** |
| Revenue | 102,893.0 | 133,162.8 | 174,986.7 | 204,596.7 | 235,833.7 | 273,110.8 | 284,340.7 | 291,773.7 | 299,401.4 | 307,228.4 | 315,260.3 |
| EBITDA | 13,441.5 | 9,457.5 | 11,242.4 | 13,349.4 | 20,575.9 | 26,695.9 | 31,039.7 | 37,832.5 | 44,510.2 | 49,821.4 | 54,591.7 |
| Capital Expenditure | (15,231.1) | (13,316.3) | (10,499.2) | (10,229.8) | (14,150.0) | (16,386.6) | (17,060.4) | (17,506.4) | (20,958.1) | (24,578.3) | (25,220.8) |
| Depreciation & Amortization | 5,790.9 | 1,823.2 | 2,099.8 | 2,046.0 | 2,830.0 | 3,277.3 | 5,118.1 | 5,251.9 | 6,287.4 | 7,373.5 | 7,566.2 |
| ΔNet Working Capital | (4,660.5) | (1,571.8) | (2,013.6) | (2,787.0) | (2,323.0) | (2,889.2) | (4,564.9) | (6,072.1) | (6,509.2) | (8,960.6) | (8,583.5) |
| EBIT | 7,650.6 | 7,634.3 | 9,142.6 | 11,303.4 | 17,745.9 | 23,418.5 | 25,921.6 | 32,580.6 | 38,222.8 | 42,447.9 | 47,025.5 |
| EBIT*(1-t) | 6,503.0 | 6,489.2 | 7,771.2 | 9,607.9 | 15,084.0 | 19,905.7 | 22,033.4 | 27,693.5 | 32,489.3 | 36,080.7 | 39,971.6 |
| Free Cash Flows to Firm (FCFF) | 1,723.3 | (6,575.8) | 1,385.4 | 4,211.1 | 6,087.0 | 9,685.6 | 14,656.0 | 21,511.1 | 24,327.9 | 27,836.5 | 30,900.6 |
| Terminal Value = | | | | | | | | | | | 410,822.0 |
| **Year** | **0.0** | **0.5** | **1.5** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** | **9.5** |
| Present Value (Yealry FCFF) = | 1,723.3 | (6,255.5) | 1,192.7 | 3,280.9 | 4,291.7 | 6,180.1 | 8,463.0 | 11,241.1 | 11,505.0 | 11,913.4 | 11,968.1 |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

## Cont. Appendix 8: Discounted Cash Flow Analysis

| DCF Calculation (In CNY mililons except Share Price) | |
|---|---|
| Present Value (All FCFF) = | 65,503.7 |
| Present Value (Terminal Value) = | 159,115.3 |
| Sum of Present Value of CF = | 224,619.1 |
| **Enterprise Value =** | **224,619.10** |
| (-) Debt | 15,276.4 |
| (+) Cash & Equivalents | 23,614.3 |
| **Equity Value =** | **232,957.07** |
| Number of Diluted Shares = | 11,183.9 |
| **Implied (Target) Share Price =** | **20.83** |

*Source: Jinko Solar Semi-Annual and Annual Reports, Team Projections*

## Appendix 9: Sensitivity Analysis

| Terminal Growth (%) | WACC (%) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 9.50% | 9.75% | 10.00% | 10.25% | **10.50%** | 10.75% | 11.00% | 11.25% | 11.50% |
| 1.77% | 22.36 | 21.46 | 20.61 | 19.82 | 19.08 | 18.38 | 17.72 | 17.1 | 16.51 |
| 2.02% | 22.91 | 21.96 | 21.08 | 20.25 | 19.48 | 18.75 | 18.06 | 17.42 | 16.81 |
| 2.27% | 23.5 | 22.51 | 21.58 | 20.71 | 19.9 | 19.14 | 18.43 | 17.75 | 17.12 |
| 2.52% | 24.13 | 23.08 | 22.11 | 21.2 | 20.35 | 19.56 | 18.81 | 18.11 | 17.45 |
| 2.77% | 24.81 | 23.71 | 22.68 | 21.72 | 20.83 | 20 | 19.22 | 18.49 | 17.8 |
| 3.02% | 25.55 | 24.37 | 23.29 | 22.28 | 21.34 | 20.47 | 19.65 | 18.89 | 18.17 |
| 3.27% | 26.34 | 25.09 | 23.94 | 22.88 | 21.89 | 20.97 | 20.11 | 19.31 | 18.56 |
| 3.52% | 27.19 | 25.87 | 24.64 | 23.52 | 22.47 | 21.5 | 20.6 | 19.76 | 18.98 |
| 3.77% | 28.13 | 26.71 | 25.41 | 24.21 | 23.1 | 22.08 | 21.13 | 20.25 | 19.42 |

*Source: Team Analysis*

In scrutinizing the robustness of our DCF model, we examined the sensitivity to key inputs such as WACC and terminal growth, both of which involve subjective estimates and wield significant influence over our valuation. The table illustrates that all scenarios (where the projected price falls below the current price of 10.02) suggest a BUY recommendation. Additionally, considering the global impetus behind the renewable transition and substantial capital commitments, we are inclined to view terminal growth as more likely to present upside potential than a looming downside threat.

## Appendix 10: Comparable Companies Set

| | Sector I: PV Modules | | Sector II: PV Cells | | Sector III: silicon wafer | |
|---|---|---|---|---|---|---|
| Company (Ticker) | JA Solar Technology Co., Ltd. | (SZSE:002459) | Tongwei Co.,Ltd. | (SHA: 600438) | TCL Zhonghuan Renewable Energy Technology Co.,Ltd. | (SZSE:002129) |
| | Canadian Solar Inc. | (NASDAQ: CSIQ) | Shanghai Aiko Solar Energy Co., Ltd. | (SHA: 600732) | Hoyuan Green Energy Co.,Ltd. | (SH:603185) |
| | Trina Solar Co., Ltd. | (SHA: 688599) | JA Solar Technology Co., Ltd. | (SZSE:002459) | Shuangliang Eco-energy Systems Co., Ltd. | (SHA: 600481) |
| | Risen Energy Co.,Ltd. | (SHE: 300118) | Trina Solar Co., Ltd. | (SHA: 688599) | Tongwei Co.,Ltd. | (SHA: 600438) |
| | LONGi Green Energy Technology Co., Ltd. | (SHSE:601012) | | | LONGi Green Energy Technology Co., Ltd. | (SHSE:601012) |

*Source: Team Analysis, Refinitiv*

According to Jinko Solar's FY 2023 Semi-annual report, Jinko Solar has three main product sectors: PV modules, PV cells, and silicon wafer. Appendix 10 shows the list of comparable companies found for each sector. Financials and trading multiples are in Appendix 11 and 12 in page 17.

## Appendix 11: Comps Set Financials

| | Financials | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Company | LTM Sales | 2023E Sales | 2024E Sales | LTM EBITDA | 2023E EBITDA | 2024E EBITDA | LTM EBIT | 2023E EBIT | LTM Net Income | 2023E Net Income | 2024E Net Income |
| **Product Type I: PV Modules** | | | | | | | | | | | |
| JA Solar Technology Co., Ltd. | ¥85,363.5 | ¥88,730.0 | ¥105,831.0 | ¥12,272.2 | ¥13,693.0 | ¥16,528.0 | ¥9,528.8 | ¥11,502.0 | ¥8,644.5 | ¥9,079.0 | ¥10,102.0 |
| Canadian Solar Inc. | ¥58,310.4 | ¥64,001.1 | ¥71,192.4 | ¥6,512.1 | ¥7,115.9 | ¥8,513.9 | ¥4,769.8 | ¥5,568.3 | ¥2,999.7 | ¥2,866.5 | ¥2,610.4 |
| Trina Solar Co., Ltd. | ¥98,704.5 | ¥115,298.0 | ¥134,667.0 | ¥8,749.0 | ¥10,506.0 | ¥14,049.0 | ¥6,504.9 | ¥7,990.0 | ¥5,950.6 | ¥7,267.0 | ¥8,810.0 |
| Risen Energy Co.,Ltd. | ¥36,379.6 | ¥40,610.0 | ¥49,599.0 | ¥3,187.5 | ¥3,534.0 | ¥4,524.0 | ¥2,077.8 | ¥2,277.4 | ¥1,476.7 | ¥1,788.0 | ¥2,441.0 |
| LONGi Green Energy Technology Co., Ltd. | ¥143,281.2 | ¥137,882.0 | ¥154,704.0 | ¥15,178.3 | ¥10,976.0 | ¥23,077.0 | ¥10,983.1 | ¥14,374.0 | ¥17,509.4 | ¥15,977.0 | ¥17,009.0 |
| **Product Type II: PV Cells** | | | | | | | | | | | |
| Tongwei Co.,Ltd. | ¥151,758.9 | ¥150,404.0 | ¥168,199.0 | ¥43,323.7 | ¥33,066.0 | ¥27,725.0 | ¥36,577.2 | ¥28,280.0 | ¥20,297.6 | ¥18,503.0 | ¥14,492.0 |
| Shanghai Aiko Solar Energy Co., Ltd. | ¥35,338.4 | ¥34,448.2 | ¥46,548.8 | ¥4,233.8 | ¥5,119.0 | ¥6,957.5 | ¥3,152.4 | ¥3,291.4 | ¥3,041.0 | ¥3,024.0 | ¥3,949.6 |
| JA Solar Technology Co., Ltd. | ¥85,363.5 | ¥88,730.0 | ¥105,831.0 | ¥12,272.2 | ¥13,693.0 | ¥16,528.0 | ¥9,528.8 | ¥11,502.0 | ¥8,644.5 | ¥9,079.0 | ¥10,102.0 |
| Trina Solar Co., Ltd. | ¥98,704.5 | ¥115,298.0 | ¥134,667.0 | ¥8,749.0 | ¥10,506.0 | ¥14,049.0 | ¥6,504.9 | ¥7,990.0 | ¥5,950.6 | ¥7,267.0 | ¥8,810.0 |
| **Product Type III: silicon wafer** | | | | | | | | | | | |
| TCL Zhonghuan Renewable Energy Technology Co.,Ltd. | ¥65,819.3 | ¥77,940.0 | ¥89,415.0 | ¥12,347.3 | ¥16,033.0 | ¥18,463.0 | ¥7,377.6 | ¥10,526.0 | ¥8,437.9 | ¥8,519.0 | ¥9,920.0 |
| Hoyuan Green Energy Co.,Ltd. | ¥17,626.8 | ¥19,000.0 | ¥20,781.0 | ¥2,624.8 | ¥2,293.0 | ¥3,000.0 | ¥2,185.7 | ¥2,300.0 | ¥2,474.4 | ¥3,681.7 | ¥4,151.1 |
| Shuangliang Eco-energy Systems Co., Ltd. | ¥22,308.3 | ¥25,189.0 | ¥31,902.7 | ¥2,305.9 | ¥3,476.7 | ¥4,728.0 | ¥1,945.8 | ¥2,581.8 | ¥1,528.8 | ¥1,930.4 | ¥2,687.3 |
| Tongwei Co.,Ltd. | ¥151,758.9 | ¥150,404.0 | ¥168,199.0 | ¥43,323.7 | ¥33,066.0 | ¥27,725.0 | ¥36,577.2 | ¥28,280.0 | ¥20,297.6 | ¥18,503.0 | ¥14,492.0 |
| LONGi Green Energy Technology Co., Ltd. | ¥143,281.2 | ¥137,882.0 | ¥154,704.0 | ¥15,178.3 | ¥10,976.0 | ¥23,077.0 | ¥10,983.1 | ¥14,374.0 | ¥17,509.4 | ¥15,977.0 | ¥17,009.0 |

*Source: Refinitiv, Team Projections*

## Appendix 12: Comps Trading Multiples

| | Enterprise Value / | | | | | | | | | Price / | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Company | LTM Sales | 2023E Sales | 2024E Sales | LTM EBITDA | 2023E EBITDA | 2024E EBITDA | LTM EBIT | 2023E EBIT | 2024E EBIT | LTM EPS | 2023E EPS | 2024E EPS |
| **Product Type I: PV Modules** | | | | | | | | | | | | |
| JA Solar Technology Co., Ltd. | 1.6 | 1.5 | 1.3 | 10.9 | 9.8 | 8.1 | 14.0 | 11.6 | 11.5 | 8.6 | 8.2 | 7.3 |
| Canadian Solar Inc. | 0.4 | 0.4 | 0.4 | 4.0 | 3.6 | 3.0 | 5.4 | 4.6 | 3.8 | 3.2 | 3.4 | 3.7 |
| Trina Solar Co., Ltd. | 0.7 | 0.6 | 0.5 | 8.4 | 7.0 | 5.2 | 11.3 | 9.2 | 7.2 | 10.4 | 8.5 | 7.0 |
| Risen Energy Co.,Ltd. | 0.5 | 0.5 | 0.4 | 5.7 | 5.2 | 4.0 | 8.8 | 8.0 | 5.7 | 13.5 | 11.2 | 8.2 |
| LONGi Green Energy Technology Co., Ltd. | 1.2 | 1.3 | 1.1 | 11.6 | 16.0 | 7.6 | 16.0 | 12.2 | 10.7 | 10.7 | 11.7 | 11.0 |
| **Product Type II: PV Cells** | | | | | | | | | | | | |
| Tongwei Co.,Ltd. | 1.1 | 1.1 | 1.0 | 3.8 | 5.0 | 6.0 | 4.5 | 5.9 | 7.8 | 7.6 | 8.3 | 10.7 |
| Shanghai Aiko Solar Energy Co., Ltd. | 1.0 | 1.1 | 0.8 | 8.6 | 7.1 | 5.2 | 11.6 | 11.1 | 8.4 | 12.2 | 12.3 | 9.4 |
| JA Solar Technology Co., Ltd. | 1.6 | 1.5 | 1.3 | 10.9 | 9.8 | 8.1 | 14.0 | 11.6 | 11.5 | 8.6 | 8.2 | 7.3 |
| Trina Solar Co., Ltd. | 0.7 | 0.6 | 0.5 | 8.4 | 7.0 | 5.2 | 11.3 | 9.2 | 7.2 | 10.4 | 8.5 | 7.0 |
| **Product Type III: silicon wafer** | | | | | | | | | | | | |
| TCL Zhonghuan Renewable Energy Technology Co.,Ltd. | 2.7 | 2.3 | 2.0 | 14.6 | 11.3 | 9.8 | 24.5 | 17.2 | 14.9 | 15.8 | 15.7 | 13.5 |
| Hoyuan Green Energy Co.,Ltd. | 0.8 | 0.8 | 0.7 | 5.7 | 6.5 | 5.0 | 6.8 | 6.5 | 4.2 | 8.5 | 5.7 | 5.1 |
| Shuangliang Eco-energy Systems Co., Ltd. | 1.3 | 1.1 | 0.9 | 12.3 | 8.2 | 6.0 | 14.6 | 11.0 | 7.8 | 17.0 | 13.5 | 9.7 |
| Tongwei Co.,Ltd. | 1.1 | 1.1 | 1.0 | 3.8 | 5.0 | 6.0 | 4.5 | 5.9 | 7.8 | 7.6 | 8.3 | 10.7 |
| LONGi Green Energy Technology Co., Ltd. | 1.2 | 1.3 | 1.1 | 11.6 | 16.0 | 7.6 | 16.0 | 12.2 | 10.7 | 10.7 | 11.7 | 11.0 |

*Source: Team Projections*

## Appendix 13: Jinko Solar Price per Share from Comps Analysis (By revenue breakdown)

| Low (weighted by 2023 LTM revenue breakdown) Trading Multiples (in CNY millions except for per share price) | 2023E | 2024E |
|---|---|---|
| EV / Sales | 0.9x | 0.7x |
| Sales | ￥133,162.8 | ￥174,986.7 |
| EV | ￥115,631.5 | ￥130,194.8 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥10.2 | ￥11.4 |
| | | |
| EV / EBITDA | 8.1x | 5.6x |
| EBITDA | ￥9,457.5 | ￥11,242.4 |
| EV | ￥76,824.6 | ￥62,965.5 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥6.8 | ￥5.3 |
| | | |
| EV / EBIT | 9.1x | 7.8x |
| EBIT | ￥7,634.3 | ￥9,142.6 |
| EV | ￥69,342.9 | ￥71,476.2 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥6.1 | ￥6.1 |
| | | |
| P/E | 9.4x | 8.2x |
| Net Income | ￥6,721.5 | ￥7,882.1 |
| Income per Share | ￥0.6 | ￥0.7 |
| Price per Share | ￥5.7 | ￥5.8 |

| High (weighted by 2023 LTM revenue breakdown) Trading Multiples (in CNY millions except for per share price) | 2023E | 2024E |
|---|---|---|
| EV / Sales | 1.5x | 1.3x |
| Sales | ￥133,162.8 | ￥174,986.7 |
| EV | ￥198,795.0 | ￥219,020.6 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥17.7 | ￥19.3 |
| | | |
| EV / EBITDA | 15.2x | 8.0x |
| EBITDA | ￥9,457.5 | ￥11,242.4 |
| EV | ￥143,911.0 | ￥90,101.7 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥12.8 | ￥7.8 |
| | | |
| EV / EBIT | 12.0x | 11.4x |
| EBIT | ￥7,634.3 | ￥9,142.6 |
| EV | ￥91,891.0 | ￥104,482.0 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥8.1 | ￥9.1 |
| | | |
| P/E | 11.6x | 10.8x |
| Net Income | ￥6,721.5 | ￥7,882.1 |
| Income per Share | ￥0.6 | ￥0.7 |
| Price per Share | ￥7.0 | ￥7.7 |

*Source: Team Projections*

The exhibits show Jinko Solar's price per share obtained from comparable company trading multiples analysis. The first exhibit demonstrates the result when assigning weights according to Jinko Solar's revenue breakdown by three product sectors. The weights for PV Modules and PV Cells are 89% and 10% according to Jinko Solar's disclosure on June 30th, 2023. Since Silicon Wafer only contributes an extremely minor revenue, we did not include it in the calculation.

## Appendix 14: Jinko Solar Price per Share from Comps Analysis (By production capacity)

| Low (weighted by 2023 expected production capacity) Trading Multiples (in CNY millions except for per share price) | 2023E | 2024E |
|---|---|---|
| EV / Sales | 1.1x | 0.9x |
| Sales | ￥133,162.8 | ￥174,986.7 |
| EV | ￥142,330.8 | ￥159,919.0 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥12.6 | ￥14.0 |
| | | |
| EV / EBITDA | 8.3x | 6.2x |
| EBITDA | ￥9,457.5 | ￥11,242.4 |
| EV | ￥78,528.5 | ￥69,261.5 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥6.9 | ￥5.9 |
| | | |
| EV / EBIT | 9.7x | 8.5x |
| EBIT | ￥7,634.3 | ￥9,142.6 |
| EV | ￥73,799.2 | ￥77,576.7 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥6.5 | ￥6.7 |
| | | |
| P/E | 9.4x | 8.2x |
| Net Income | ￥6,721.5 | ￥7,882.1 |
| Income per Share | ￥0.6 | ￥0.7 |
| Price per Share | ￥5.7 | ￥5.8 |

| High (weighted by 2023 expected production capacity) Trading Multiples (in CNY millions except for per share price) | 2023E | 2024E |
|---|---|---|
| EV / Sales | 1.8x | 1.5x |
| Sales | ￥133,162.8 | ￥174,986.7 |
| EV | ￥234,233.5 | ￥262,272.0 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥20.9 | ￥23.2 |
| | | |
| EV / EBITDA | 14.0x | 8.6x |
| EBITDA | ￥9,457.5 | ￥11,242.4 |
| EV | ￥132,785.8 | ￥96,839.8 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥11.8 | ￥8.4 |
| | | |
| EV / EBIT | 13.6x | 12.6x |
| EBIT | ￥7,634.3 | ￥9,142.6 |
| EV | ￥103,556.8 | ￥114,867.1 |
| Net Debt | ￥1,256.7 | ￥3,291.3 |
| Price per Share | ￥9.2 | ￥10.0 |
| | | |
| P/E | 13.1x | 11.6x |
| Net Income | ￥6,721.5 | ￥7,882.1 |
| Income per Share | ￥0.6 | ￥0.7 |
| Price per Share | ￥7.9 | ￥8.2 |

*Source: Team Projections*

The exhibit demonstrates the result when assigning weights according to the production capacity (FY 2023E) of Jinko Solar's three product sectors. Jinko Solar will achieve capacity of 75GW, 75GW, and 90GW in its PV Cells, Silicon Wafer, and PV Modules production, by which we assign the weights 31.2%, 31.2%, and 37.5% to the three sectors respectively

## Appendix 16: Precedent Transactions Targets Operating Statistics & Transaction Multiples

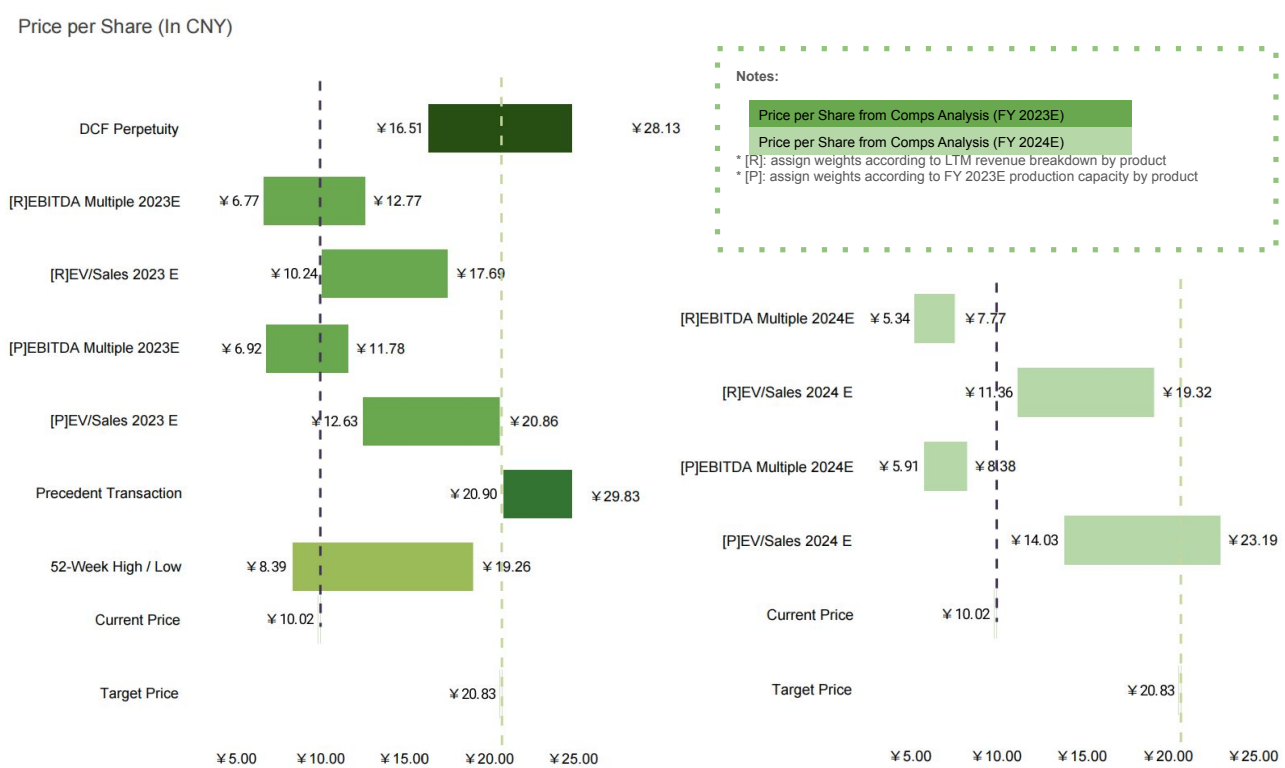
| Announcement Date (MM/DD/YYYY) | Portion | Type | Buyer Company | Target Company | Operating Statistics As of Before the Transaction (in CNY millions) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Transaction Size | Market Value | Cash | Total Debt | Minority Interest & Preferred | Enterprise Value |
| 4/9/2021 | 7.3% | PIPE | China Life Asset Management Company Limited, etc. | TCL Technology Group Corporation | 9,597.0 | 131,266.4 | 22,373.1 | 607.5 | 56,425.2 | 165,925.9 |
| 06/30/2023 | 11.9% | PIPE | Non-Public | Trina Solar Co., Ltd | 10,900.0 | 91,349.1 | 25,158.7 | 32,107.1 | 4,819.8 | 103,117.2 |
| 12/20/2020 | 6.0% | Acquisition of Equity Stake | Hillhouse Capital Management Pte. Ltd | LONGi Green Energy Technology Co., Ltd. | 15,841.4 | 264,023.8 | 15,841.4 | 12,135.4 | 958.7 | 261,276.4 |
| 04/17/2020 | 5.2% | PIPE | Caitong Fund Management Co., Ltd., etc. | Tongwei Co.,Ltd | 5,983.4 | 114,721.4 | 3,852.5 | 14,590.4 | 502.4 | 125,961.8 |

| Announcement Date (MM/DD/YYYY) | Portion | Type | Buyer Company | Target Company | Operating Statistics As of Before the Transaction (in CNY millions) | | | | Equity Value / | Enterprise Value / | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Earnings | Revenue | EBIT | EBITDA | Earnings | Revenue | EBIT | EBITDA |
| | | | | | | | | | x | x | x | x |
| 4/9/2021 | 7.3% | PIPE | China Life Asset Management Company Limited, etc. | TCL Technology Group Corporation | 6,383.8 | 95,214.8 | 6,877.8 | 16,916.6 | 20.6 | 1.7 | 24.1 | 9.8 |
| 06/30/2023 | 11.9% | PIPE | Non-Public | Trina Solar Co., Ltd | 5,950.6 | 98,704.5 | 6,504.9 | 8,767.2 | 15.4 | 1.0 | 15.9 | 11.8 |
| 12/20/2020 | 6.0% | Acquisition of Equity Stake | Hillhouse Capital Management Pte. Ltd | LONGi Green Energy Technology Co., Ltd. | 8,152.1 | 44,035.9 | 9,030.8 | 10,586.4 | 32.4 | 5.9 | 28.9 | 24.7 |
| 04/17/2020 | 5.2% | PIPE | Caitong Fund Management Co., Ltd., etc. | Tongwei Co.,Ltd | 2,488.4 | 39,211.2 | 3,201.3 | 5,390.7 | 46.1 | 3.2 | 39.3 | 23.4 |
| **Mean** | | | | | | | | | 28.6 | 3.0 | 27.1 | 17.4 |
| **High** | | | | | | | | | 46.1 | 5.9 | 39.3 | 24.7 |
| **Low** | | | | | | | | | 15.4 | 1.0 | 15.9 | 9.8 |

*Source: Team Analysis, Wind, Bloomberg*

**Notes:**
*Transactions are selected from comparable companies' previous transactions

## Appendix 17: Football Field of Jinko Solar's Price per Share Base on Different Valuation Methods




*Source: Team Analysis, Wind, Bloomberg*

The football field lists the ranges of price per share obtained of Jinko Solar in FY 2023E and FY 2024E from comps analysis, and price per share range as of FY 2023 LTM (June 30th, 2023) obtained from DCF analysis. From the graph, we can see that The current price is located in the lower half of the predicted ranges, which is aligned with our **BUY** recommendation.