MORGAN CREEK
CAPITAL MANAGEMENT

ALTERNATIVE THINKING ABOUT INVESTMENTS

New China Perspectives

Welcome to the weekly issue of Morgan Creek's ***New China Perspectives****. It is comprised of research from Morgan Creek's China-based investment team together with curated articles of interest. In addition to timely political and economic news covering greater China, Morgan Creek's China team seeks to provide in-depth perspectives on investing in the technology, consumer and healthcare sectors in the region. Our research leverages the "on the ground" insights of our team together with Morgan Creek's decades-long experience in covering the region. Our team are focused, thematic investors primarily covering the technology, consumer, and healthcare sectors and investing in private companies and early-stage managers with deep local expertise. To learn more about our team and investment offerings, please email chinateam@morgancreekcap.com.*

Best Regards,

Mark W. Yusko

Mark W. Yusko
CEO & CIO

NOTES FROM THE BUND[1]

This is the second installment of a four-part series exploring China's corporate debt. The prior newsletter explained China's debt structure concerning the funding strategy of local governments. This practice has been effectively enabling the country to build its leading strategic sectors where the nation could enjoy both tax and GDP growth. The Photovoltaic ("PV")[2] industry is one of the signature examples. In this newsletter, we will trace the development of the PV industry across various countries to the present, where China has become the dominant player in the field.

History of PV development with government support

Rise of PV – United States

The PV industry originated in the United States in the 1970s as the Organization of Arab Petroleum Exporting Countries (OAPEC) instituted an oil embargo to resist Israel, causing substantial petroleum shortages and elevated prices. In response, the Carter Administration not only imposed gasoline rationing[3] but also pushed for increased use of renewable energy, unleashing substantial federal subsidies. President Carter proposed the National Energy program, which included[4]:

- **Solar tax credits**: a tax credit of 40% for the first $1,000 and then 25% of the next $6,400 to pay for the installation of solar equipment
- **Business investment tax credit**: industrial and commercial investments in solar equipment to receive a 10% tax credit for energy saving investments
- **Federal Energy Management Program**: the federal government to begin a three-year solar program for federal buildings to demonstrate its confidence in solar technology

As a result, in 1980, the United States was able to control about 76% of the global PV market.

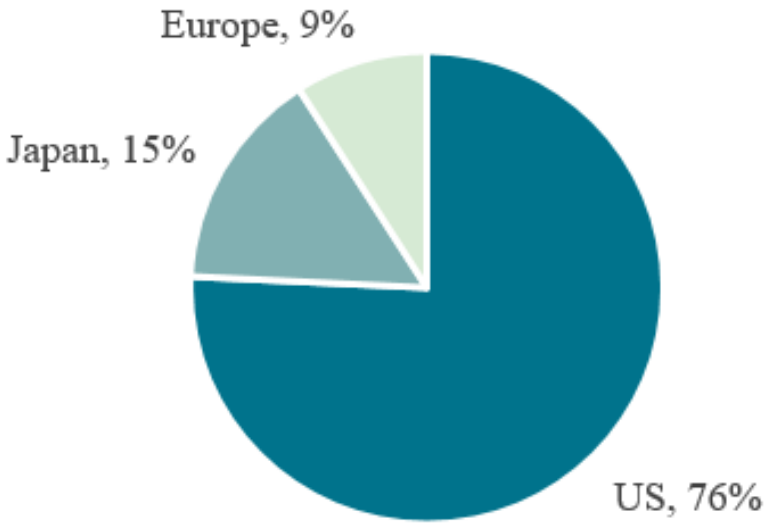

Figure 1: PV market share by country in 1980 [5]

However, the subsequent Reagan administration readjusted the focus back to fossil fuels. This Administration dedicated itself to securing these resources. Reagan's first executive order eliminated price controls on oil and natural gas, encouraging domestic production to soar. Through leveraging geopolitical alignment, the President, together with Middle East partners, boosted international production. Both drove down the price dramatically, declining 75% within one year. With oil prices moderating, incentives on PV stopped, and previously installed solar panels were taken down.

Migration of PV supply chain – EU

The battlefield migrated to the EU, notably Germany, in the 1990s. With the signing of the Kyoto Protocol in 1997, Germany released its Renewable Energy Sources Act in 2000, specifically introducing Feed-in Tariffs ("FiTs"), a policy designed to support the development of renewable energy sources by providing a guaranteed, above-market price for producers, which is then globally used for incentivizing the industry. In addition, Germany managed to control the production of polysilicon, a key upstream material. The year 2004 was a booming year for the global PV industry.

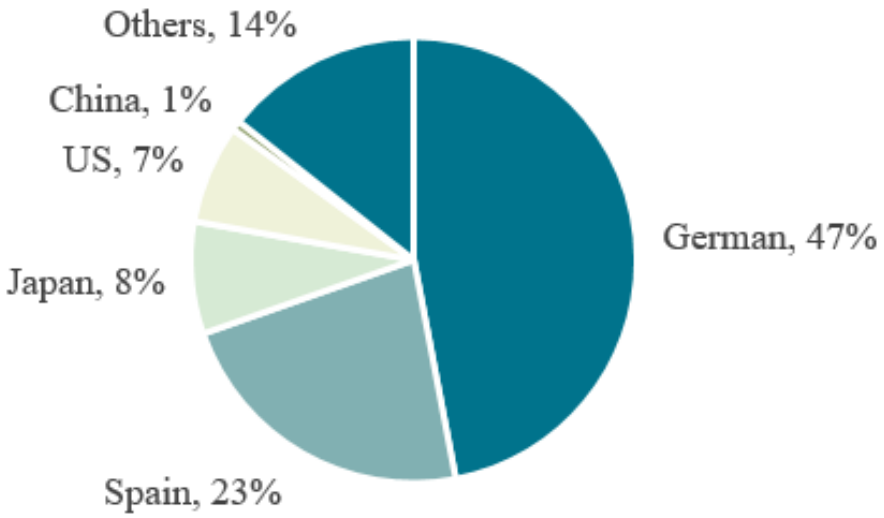

Figure 2: PV market share by country in 2007 [6]

However, the global financial crisis arrived in 2008 and was followed by a European sovereign debt crisis a year later. Among the austerity measures adopted was the elimination of support for the PV industry.

The next epicenter – China

China's incentives towards PV started as early as 2000. The local authorities backed multiple domestic players to start PV concession bidding projects. In essence, the government granted exclusive operation rights (including but not limited to the design, construction, and maintenance of the station) to companies during the life of the agreement through bidding. In the meantime, the local grid companies, which are generally state-owned enterprises (SOEs), gave assurance that they would buy the electricity generated by these companies at a fixed price. The bid winners mostly were also large-scale electricity generation SOEs. For example, SPIC[7] won half of the projects during that period.

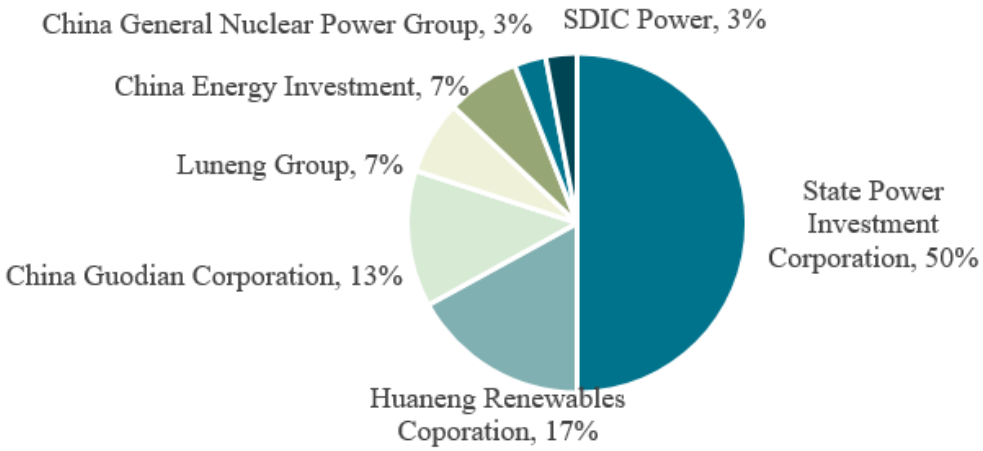

Figure 3: Project scale by PV concession bid winner [8]

Because of the nature of these entities, up to 80% of their start-up capital was structured as loans with implicit government guarantees. These were manifest in the country's corporate debts.

Projects	Bid winner	Start-up Capital (RMB million)	Bank Loans (RMB million)	Bank Loans %
20MW in Jingbian, Yulin	China Energy Investment	283	226	80%
30MW in Gonghe, Qinghai	China Energy Investment	568	227	40%
20MW in Henan, Qinghai	China Energy Investment	349	279	80%
20MW in Bayan Nur, Inner Mongolia	China Energy Investment	381	305	80%
30MW in Qingtongxia, Ningxia	Huaneng Renewables	349	279	80%

Table 1: Financing structure of several PV concession bidding projects [9]

By 2006, China began introducing FiTs to stimulate the consumption of solar energy. In 2011, the central government unified national PV FiTs at the price of RMB 1.15 per kilowatt-hour (kWh) (equivalent to US$0.18/kWh), followed by extra subsidies from local governments.

To summarize, the Chinese government had a long term, systematic plan to build up the PV industry utilizing local government debt masqueraded as corporate SOE debt and successfully built a world leading industry. At the beginning, subsidies focused on lowering the hurdle of initial investments for enterprises through land leasing and financing. Once the fixed assets were online, subsidies turned towards stimulating demand and carrying out market-oriented reforms. As the industry matured, subsidies gradually leveled out until grid parity was achieved. The entire process took nearly 20 years.

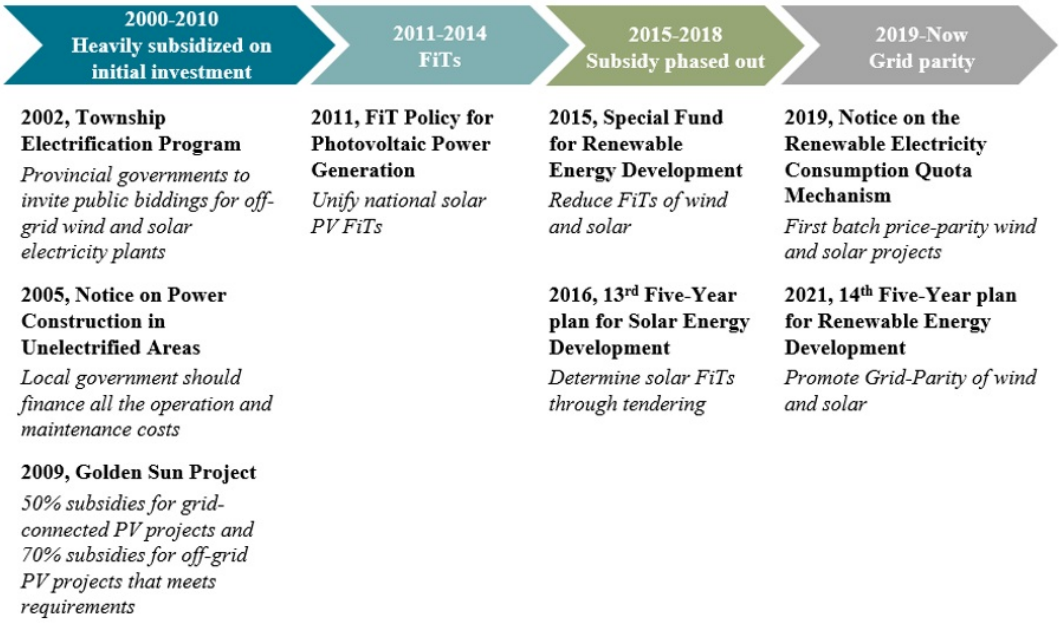

Figure 4: Timeline of renewable energy incentives in China, 2006-2021 [10]

China dominates the global solar energy market today and holds 40% of the market share by installation as of 2021.

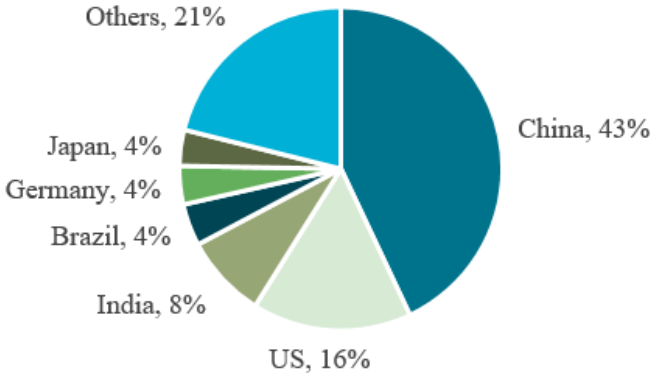

Figure 5: PV market share by newly added capacity by country in 2021 [11]

Moreover, China has lower electricity costs compared to its developed peers.

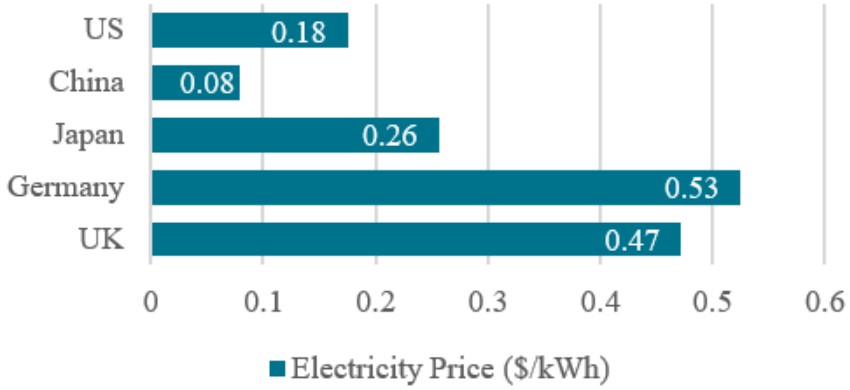

Figure 6: Electricity prices of Top 5 economy by 2021 GDP [12]

Necessity of government incentives

Throughout the PV development progress, there were three patterns of incentives:

Economy	Methodology of Subsidies		
	Fixed Assets /Initial Investments	FiTs	Tax Credits
US			√
EU		√	
China	√	√	

Table 2: Methodology of subsidies by country

Renewable energy, in the beginning, presented higher costs (>10x) than traditional resources, leading to less competitive advantages in the market. The dilemma is that the cost reduction could be achieved by wide scale adoption. Therefore, the government's direct incentive towards the industry is critical to keep the same price level of PV energy as fossil fuels, resulting in a growing market share of the new energy to drive down the cost. The process could take years of effort and is capital intensive. With support from FiTs, the Chinese government has successfully leveraged debt to spur economic growth in the renewables industry. Through optimizing PV development, the government has revamped the value chain from upstream materials to downstream consumption. We will elaborate on the story in the next episode.

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CHINA NEWS SPOTLIGHT

Top China Economist Sees Possible Interest Rate Cut Next Quarter: China's central bank may have more room to cut interest rates in the second quarter as the risk of another Covid wave looms in coming months and the US Federal Reserve ends its interest rate hikes, according to a prominent Chinese economist. The People's Bank of China could face less constraints on easing policy in the next quarter, said Zhong Zhengsheng, chief economist at Ping An Securities Co., adding that domestic inflation will likely stay weak. Zhong has previously consulted with Premier Li Keqiang on government policy.. *Read More.*

GLP Spins out Fund Management Arm to Create Alternatives Manager: GLP Capital Partners spun off from Singapore-incorporated real estate company GLP and unveiled a new structure as a dedicated alternatives manager focused on real asset and private equity strategies. The alternatives manager invests and manages third-party capital and is also the exclusive investment manager of GLP on a perpetual and discretionary basis, the firm said in a statement Tuesday. Information on ownership was not immediately available. *Read More.*

Support Policies Boosting Recovery in China's Vital Property Sector: China's property sales and housing construction are expected to pick up considerable momentum throughout 2023, inspired by the central government's steady policy support since late 2022. The sector has been struggling for some time, with various large developers mired in debt, and the three-year-long COVID-19 pandemic made things worse to some extent. The urban property sector accounts for nearly 40 percent of Chinese bank lending and 50 percent of the local governments' yearly revenues, so it is imperative for the country to strengthen housing construction and trade, industry insiders and economists say. *Read More.*

Geely's EV Brand Zeekr Raises $750 million in Fresh Funding Round: Zeekr, the electric car brand of China's Geely Automobile Holdings (0175.HK), is raising $750 million from five new and existing investors in a funding round that values the brand at $13 billion. Zeekr, which sells two purely electric car models, said in a statement on Monday that proceeds from the funding round will be used to support technology research and the global expansion of the Zeekr brand. *Read More.*

BYD to Build $1.2 bln EV Battery Plant in Central China: BYD , the world's largest maker of electrified vehicles, plans to invest $1.2 billion to build a new factory for its batteries in China, according to environmental appraisal filings. FinDreams Technology, the Chinese company's battery unit is aiming to build a facility with the capacity to produce 40 gigawatt hours per year of its Blade Battery in the city of Zhengzhou in Henan province, according to environmental filings published on the Zhengzhou government website on Friday seeking public feedback on the project. *Read More.*

Chinese IPOs are Coming Back to the U.S. : Chinese startups are raising millions of dollars in U.S. stock market listings again, after a dry spell in the once-hot market. Hesai Group, which sells "lidar" tech for self-driving cars, listed on the Nasdaq Thursday. Shares soared nearly 11% in the debut. The company raised $190 million in its

initial public offering, more than initial plans — and one of the largest listings since ride-hailing giant Didi raised $4.4 billion in its June 2021 IPO. That listing ran afoul of Chinese regulators, who ordered a cybersecurity review into Didi just days after its public listing. The company delisted later that year. *Read More.*

Gracell Biotechnologies Announces China NMPA Clearance for IND Application for Phase 1/2 Clinical Trial of FasTCAR-T GC012F for Treatment of Relapsed/Refractory Multiple Myeloma:
Gracell plans to initiate a Phase 1/2, single-arm, open-label, multi-center trial in China in the third quarter of 2023 to further evaluate GC012F in RRMM patients. Following the U.S. FDA's clearance of Gracell's IND application announced on Feb. 3, Gracell also plans to initiate a Phase 1b/2 clinical trial in the U.S. in the second quarter of 2023. *Read More.*

Corbus Pharmaceuticals Expands Oncology pipeline with the addition of a clinical stage Nectin-4 targeting Antibody Drug Conjugate (ADC): "This agreement adds a promising clinical-stage asset with a validated mechanism of action to our pipeline and reinforces the evolution of Corbus into a precision oncology company. We will leverage the R&D infrastructure that we have established for our TGFβ modulator (CRB-601) to also enhance our understanding of Nectin-4," said Yuval Cohen, Ph.D., Chief Executive Officer of Corbus. "By combining recent cost-reduction measures as well as prioritization of resources to this new program, we can maintain our previously stated cash runway through the second quarter of 2024." *Read More.*

[1]The Bund is a historic waterfront area in central Shanghai, where Morgan Creek's office is located. From the 1860s to the 1930s, it was the rich and powerful center of the foreign establishment in Shanghai, operating as a legally protected treaty port. The picture above is part of the historical waterfront.
[2]Note: Photovoltaic is the conversion of light into electricity.
[3]Note: Gasoline rationing limited US citizens to buying gasoline every other day depending on the last number of their license plates.41]
[4]Source: Presidents and Policy; Source: https://sites.lafayette.edu/
[5]Source: Photovoltaic industry progress from 1980 through 1986;https://www.osti.gov; Jun 1st, 1987
[6]Source: Our World In Data
[7]Note: SPIC stands for State Power Investment Corporation
[8]Source: National Energy Administration
[9]Source: National Energy Administration
[10]Source: A Review on Renewable Energy Transition under China's Carbon Neutrality Target,https://www.mdpi.com; Oct 22nd, 2022
[11]Source: International Renewable Energy Agent (IRENA)
[12]Source: GlobalPetrolPrice.com