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□ **CHINA FINANCE: LEVERAGING CHINA'S DEMAND INTO OPPORTUNITIES TO FINANCE, DEVELOP AND COMMERCIALIZE RENEWABLE ENERGY TECHNOLOGY**

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INTRODUCTION

A convergence of market factors and government policies is spurring Chinese demand for U.S. renewable energy technologies. In 2012, such demand was seen in technology-driven acquisitions of distressed U.S. companies by Chinese buyers. In addition, such demand has supported more complex transaction structures, in which Chinese companies assist in the funding, development and commercialization of U.S.-originated renewable energy technologies in exchange for privileged access to such technologies when developed and a share of the benefits of commercialization. The market and policy dynamics driving such transactions are likely to persist into 2013 and beyond, offering important strategic opportunities for U.S. renewable energy companies and their investors.

CHINESE END-MARKET, INVESTMENT APPETITE AND DEMAND FOR TECHNOLOGY

Driving China's demand for renewable energy technology is the vastness of China's end-market for renewable energy generating capacity and its resulting appetite for renewable energy investments. In 2012, China installed 15.9 gigawatts (GW) of onshore wind turbines, or 35% of all new wind power capacity worldwide.³ In the fourth quarter of 2012, though partially the result of seasonal factors, China received 33% of worldwide shipments of solar photovoltaic (PV) panels.⁴ Because of geographic

proximity, as well as political and cultural factors, Chinese engineering, procurement and construction contractors (EPCs) and suppliers are best positioned to arrange and construct this capacity and to deliver the technology incorporated therein to the end-market. If such EPCs and suppliers do not own the technology themselves, often the fastest and surest way for them to obtain it is to acquire it or to license it, frequently from outside of China. Considering investment dollars as an alternate measure of Chinese demand for renewable energy, China accounted for USD \$67.7 billion, or approximately 25%, of the USD \$268.7 billion invested globally in renewable energy in 2012.⁵ Such investment capital funds the development of technology within China as well as its acquisition from abroad.

CHINA PRO-TECHNOLOGY POLICIES

China is seeking to develop and acquire renewable energy technology as an express goal of its industrial policy. Much attention is paid to the targets for generation capacity set forth in China's five-year plans (the "Five Year Plans") and the pro-demand policies (especially China's purchase mandates, feed-in tariffs and subsidy programs) that support them. As of writing, China's 2015 capacity targets include 260 GW of hydropower (excluding pumped-storage), 100 GW of grid-connected wind capacity⁶ and 35 GW

22, 2013, <http://www.solarbuzz.com/news/recent-findings/china-consumes-33-global-photovoltaic-panel-shipments-q412-according-npd-solar>.

⁵ "New Investment in Clean Energy Fell 11% in 2012," Bloomberg New Energy Finance, January 14, 2013, <http://about.bnef.com/press-releases/new-investment-in-clean-energy-fell-11-in-2012-2>.

⁶ "Key Information at a glance: China 12th Five-Year Plan for Renewable Energy Development (2011-2015)," China National Energy Administration and China National Renewable Energy Centre,

³ "China Was World's Largest Wind Market in 2012," Bloomberg New Energy Finance, February 4, 2013, <http://about.bnef.com/press-releases/china-was-worlds-largest-wind-market-in-2012>.

⁴ "China Consumes 33% of Global Photovoltaic Panel Shipments in Q4'12, According to NPD Solarbuzz," January

of solar.⁷ The Five Year Plans also, however, contain technology-related goals – e.g., in the case of solar cells, regarding declines in manufacturing costs or increases in conversion efficiency – as well as even more specific technology-related “tasks” and “key focus areas.” The enumeration of these items signals key support for Chinese manufacturers to accumulate renewable energy technology, whether through research and development, licensing or acquisitions.

U.S. MARKET AND POLICY CONDITIONS

Even as China is speeding its acquisition of renewable energy technology, in the United States market conditions and policy uncertainty have increased the cost and decreased the supply of funding to develop new technologies. As of the end of 2012, the NASDAQ Clean Edge Green Energy Index, an index of U.S.-traded clean-energy companies, was 66% below its peak in November 2007, and only 13% above its nadir in January 2009 – reflecting the substantial losses and limited recoveries seen by many U.S. renewable energy investors. As for federal policy, although the American Taxpayer Relief Act of 2013 extended the eligibility deadline for the renewable electricity production tax credit and the business energy investment tax credit, it did so only for projects that begin construction before the end of 2013. While development of clean energy is a U.S. national priority and new technologies continue to be developed, the U.S. does not have a national initiative comparable to that of China. These circumstances, combined with the strength of demand and policy support prevailing in China, create strategic opportunities for U.S. technology companies willing to look abroad.

ACQUISITIONS

Recent purchases of distressed U.S. technology targets and assets by Chinese buyers – including

<http://www.cnred.org.cn/english/manageInfo.do?action=s howColumn&type=article&typeld=102>.

⁷ “China increases solar target by 67% – yet again,” China Renewable Energy Information Portal, February 4, 2013, <http://en.cnrec.info/news/solar/2013-02-04-462.html>.

Hanergy’s acquisition of California-based MiaSolé Inc. and Wanxiang Group’s acquisition out of bankruptcy of the non-defense-related assets of A123 Systems Inc., each of which closed in early 2013 – have demonstrated both China’s appetite to acquire renewable energy technology and the challenges faced by emerging U.S. technology companies.

Hanergy’s acquisition of MiaSolé, like its acquisition earlier in 2012 of Solibro, the thin film arm of the insolvent German solar group Q-Cells, enabled Hanergy to grow its own stock of technology and furthered China’s economy-wide goals of developing thin film technologies and increasing conversion efficiency. Both transactions were financed in part by a USD \$4 billion credit line from the China Development Bank.

Among reported rationales for Wanxiang’s acquisition were (i) its ability to offer sufficient capital to allow A123 to meet its production commitments (and to generate the revenue resulting therefrom) and (ii) its opportunity, as a Chinese company, to market A123’s products to large Chinese customers, such as State Grid. The transaction thus evidenced both the relative availability of Chinese capital to fund renewable energy technologies and also the perceived advantages enjoyed by Chinese companies in delivering such technologies to the Chinese end-market.

The bids by Hanergy and Wanxiang resulted in substantially more attractive transactions to MiaSolé’s and A123’s stakeholders than reported alternatives. For MiaSolé, having failed to find a strategic partner in the nine months after publicly announcing that it required one, Hanergy offered possibly the only viable platform for the continued development of the company’s technology and, reportedly, a commitment to retain many of the company’s employees for a year.⁸ In the A123 auction, Hanergy’s winning bid was more than twice the opening offer of USD \$125 million from Johnson

⁸ “Hanergy completes MiaSolé acquisition,” optics.org, January 9, 2013, <http://optics.org/news/4/1/13>.

TABLE 1: SELECT U.S.-CHINA CLEAN AND RENEWABLE ENERGY JOINT VENTURES

Non-Chinese Party	Chinese Parties	Business of Joint Venture
SunPower	Tianjin Zhonghuan Semiconductor; Inner Mongolia Power Group; Hohhot Jinqiao City Development Company	Manufacturing and deployment of SunPower’s proprietary SunPower C7 Tracker (C7) concentrator technology
LanzaTech	BaoSteel	Develop and commercialize LanzaTech’s waste-gas-to-ethanol technology for steel mills
ZBB Energy Corporation	PowerSav, Inc.; AnHui Xinlong Electrical Co.; Wuhu Huarui Power Transmission and Transformation Engineering Co.	Develop, produce, sell, distribute and service ZBB’s advanced storage batteries and power electronics
EMCORE Corporation	San’an Optoelectronics Co., Ltd.	Develop, manufacture and distribute concentration photovoltaic receivers, modules and systems for terrestrial solar power applications and to commercialize EMCORE’s terrestrial Gen-III CPV systems

Controls Inc. In each case, Chinese demand for renewable energy technology resulted in substantial value for U.S. stakeholders, notwithstanding the substantial discounts at which the transactions were executed relative to previous valuations.

NON-ACQUISITION TRANSACTION STRUCTURES

Transaction structures other than acquisitions can also offer opportunities for U.S. renewable energy technology companies to take advantage of China’s end-market demand, abundance of capital and friendly policy environment. For Chinese companies, they can offer a means to bring new technology to China and to participate in the further development and commercialization of such technology.

One example of how is through a joint venture, organized in China, to which a non-Chinese company contributes know-how and certain rights to the applicable technology, and Chinese partners

contribute some or all of the development funding.⁹ The non-Chinese party generally must contribute at least 25% of the entity’s registered capital, either in cash or in-kind, provided that any in-kind amounts are subject to valuation in China. This structure has been used successfully by companies in the clean energy and renewable energy sectors as a means to

⁹ Joint ventures in China can be structured as equity joint ventures (EJVs), cooperative or contractual joint ventures (CJVs), foreign-invested companies limited by shares (FICLSs), and foreign-invested partnerships (FIPs), a complete discussion of which is beyond the scope of this article. Also beyond the scope of this article is the impact of China’s *Catalogue of Industries for Guiding Foreign Investment* (the Foreign Investment Catalogue), which, based on the business of the proposed venture, (i) indicates what the level of approval scrutiny or application requirements the venture will face and (ii) may limit the venture to certain structures, such as only EJVs or CJVs, and/or require the Chinese partner to be the controlling partner in the joint venture or limit the ownership of the foreign partner to no more than 49% or 50%. As a result of amendments to the Foreign Investment Catalogue in 2007 and 2011, most renewable energy sectors are classified as “encouraged” industries, entitling them to the lowest level of scrutiny.

enter the Chinese market and to commercialize and In a typical transaction, the U.S. party will contribute exclusive rights to market the technology to all or a segment of the Chinese end-market (and possibly other markets) and, through management rights in the joint venture, will work with the Chinese party to develop and commercialize the technology. Unlike in a sale transaction, the U.S. party will retain a portion of the overall equity value of the technology, both through its interest in the joint venture and in the intellectual property rights that it retains.¹⁰ The joint venture nonetheless may provide it access to development funding, a demonstration platform and, if the technology proves commercializable, a strategic customer and a local partner with access to distribution channels. Success in China may also lead to success in other countries. For the Chinese party, the joint venture may also allow it to acquire equity in and enable the development of a technology that, if successful, could be deployed to its production facilities or marketed to its customers throughout China and elsewhere, depending on the allocation of rights between the partners.

The establishment of a joint venture requires Chinese government approval, but, unlike with wholly foreign owned entities (WFOEs), in which the foreign party must apply for such approval, in a joint venture the Chinese partner must apply for the approval.¹¹ On the one hand, this may speed the approval process if the Chinese partner has good relations with applicable regulators; on the other, it may make the process more opaque to the non-Chinese party. China is bound by world trade organization (WTO) commitments to ensure that permission for foreign investment is not subject to conditions covering the transfer of technology.¹²

¹⁰ A joint venture requires negotiation of a significant number of details that are beyond the scope of this article. In our experience, where there is a business imperative, the details of governance and allocation of rights, responsibilities and profits can be agreed.

¹¹ "China's Approval Process for Inbound Foreign Direct Investment: Impact on Market Access, National Treatment, and Transparency," U.S. Chamber of Commerce 2012, based on research by Covington & Burling LLP, ppg. 17-18.

¹² See *ibid.*, p. 55.

develop new and existing technology. See Table 1.

However, some foreign investors have reportedly been required to commit to technology transfers in exchange for investment approval. In joint ventures to which the non-Chinese party already intends to contribute certain intellectual property rights, any such expansion of the transfer of technology may undermine the economic rationale for the transaction.

As an alternative to a formal joint venture where each partner contributes assets to an existing or newly formed entity, U.S. renewable energy technology companies may consider joint-development arrangements with Chinese companies that serve the Chinese end-market. Such arrangements may be best-suited to makers of highly complementary products, as they leverage the mutual benefits to be realized by coordinated action (such as the parties investing in compatible designs) and the mutual costs to be suffered by the arrangement ending.

Consider a joint development arrangement requiring a U.S. technology company to develop a component for renewable energy equipment to be manufactured and marketed in China. As a threshold matter, the Chinese party may require the U.S. party to demonstrate the proposed component's ability to meet technical and commercial specifications. The parties may agree that if such specifications are met they will begin to develop prototypes – with the U.S. party having design authority with respect to the component and the Chinese party having design authority with respect to the integrated product, in each case subject to the review of a joint committee or similar body charged with coordinating the parties' activities. The integrated prototype will then be subject to further testing and, if benchmark results are achieved, manufacturing will begin. The cost of manufacturing the component may be funded by either party or both parties together; the component (unless manufactured by the Chinese party) will then be supplied to the Chinese party on a "cost-plus" or other basis. The Chinese party might also pay the U.S. party a license fee, typically assessed on each unit

sold, both to use the technology contained in the component and for the exclusive right to market the integrated product (and also, in some cases, the component) in China. The parties can provide that such exclusivity will end if the Chinese party fails to meet certain sales milestones.

Whereas a joint venture must allocate management rights among the parties and will often grant substantial management rights to the U.S. party, in a joint development arrangement the U.S. party is less likely to be involved in the marketing or commercialization of the product incorporating the U.S. party's technology. The development and integration of the component and its technology must be coordinated, but management of a separate corporate entity is not required. The ownership of related intellectual property will differ as well. In a joint venture, the parties jointly own (through the joint venture) any intellectual property contributed to the joint venture by the U.S. party and any new intellectual property developed by the joint venture itself. In a joint development arrangement, the intellectual property rights transferred by the U.S. party generally relate to the use of the component or other specific technology in the integrated product being developed and marketed by the Chinese party. There is less joint development of intellectual property and, accordingly, issues surrounding ownership of intellectual property rights may be more easily resolved. A joint development arrangement is still a complicated arrangement and

takes time to establish and maintain, but it provides an alternative to traditional joint venture structures that may be more desirable in certain circumstances.

China's demand for renewable energy technology creates strategic opportunities for U.S. technology companies. Chinese parties are becoming more experienced with traditional acquisitions; where valuation gaps can be bridged, such transactions offer the fastest path to monetization for investors. For U.S. companies wishing to retain equity in their technologies or some control over them as they enter the Chinese market, joint ventures and joint development arrangements may offer access to funding, a development platform, a strategic customer and a local partner with access to distribution channels in China.

ABOUT THE AUTHORS

Covington & Burling LLP is a leading international law firm with more than 800 lawyers practicing in Asia, the United States, and Europe. Covington is consistently ranked as a leading firm in legal industry surveys, including Chambers Asia-Pacific and The Asia Pacific Legal 500. Scott Anthony is a partner in the firm's Silicon Valley office and a member of the Corporate practice group. Daniel B. Levine is an associate in the firm's New York office and a member of the Corporate practice group. Both have extensive experience in China.