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BNEF PV module maker tier 1 list, 4Q 2017

Bloomberg New Energy Finance has developed a tiering system for PV module makers based on bankability, to create a transparent differentiation between the hundreds of manufacturers of solar modules on the market. This basic categorisation has been used as an advertisement by certain manufacturers, but should never replace a proper due diligence process in product selection.

1. Why divide the PV market into tiers?

Bloomberg New Energy Finance is frequently requested by clients for a list of 'major' or 'bankable' suppliers - in common industry parlance, tier 1 suppliers - for use in manufacturing forecasts, preliminary competitor analysis, and other internal comparisons. It is very common for industry players to refer to 'tier 1' players, but these terms are seldom defined or described, which is unhelpful for firms outside the solar industry trying to get a basic overview.

We strongly recommend that module purchasers and banks do not use this list as a measure of quality, but instead consult a technical due diligence firm such as **Edif ERA (formerly OST Energy), Sgurr Energy, DNV GL, Black & Veatch, TUV, E3, STS Certified, Clean Energy Associates, Solarbuyer, Pvbuyer, Enertis, Oravia or Leidos Engineering**. These would usually consider what factory the module comes from, as well as the brand, and give an informed opinion on whether the modules will perform as expected.

2. Definitions

'Bankability' - whether projects using the solar products are likely to be offered non-recourse debt financing by banks - is the key criterion for tiering. Banks, and their technical due diligence providers, are extremely unwilling to disclose their whitelists of acceptable products. Bloomberg New Energy Finance therefore bases its criteria in what deals have been closed in the past, as tracked by our database - 17,000 photovoltaic financings worldwide as of February 2017.

We only tier manufacturers which actually own production facilities and sell under their own brands. Companies which outsource production under brand names are not tiered. We do not publish a tier 2 or 3 list.

3. Tier 1

Tier 1 module manufacturers are those which have provided own-brand, own-manufacture products to **six** different projects, which have been financed non-recourse by **six** different (non-development) banks, in the past two years. These 1.5MW+ deals must be tracked by our database, ie the project location (sufficiently to identify the project uniquely), capacity, developer, bank and module maker must be in the public domain. One exception is manufacturers which have filed for bankruptcy or a form of insolvency protection, or experienced a major default on bond payments; these are removed from the tier 1 list until further notice. Full methodology [here](#).

In China, India, Turkey and some other markets, non-recourse finance is rare and cannot be assumed. From 2Q 2017, we will therefore require additional evidence that a deal is non-recourse (for example an email from a non-affiliated developer, or a look at a confidential project finance document) to include a financing in our database and therefore count it for tiering.

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4. Can I share this list on the internet?

No. If you are a BNEF Solar Insight client, you can share with selected business partners who will not release it further. Pirate copies on the internet may be doctored and are published without BNEF's permission and against our terms and conditions.

Table 1: Tier 1 PV module manufacturer list, 4Q 2017

Company	Capacity	Company	Capacity
Trina Solar*	8,000	Changzhou Almaden	1,500
Jinko Solar*	7,500	HT-SAAE*	1,500
JA Solar*	7,000	China Sunergy	1,450
Canadian Solar*	6,970	REC Group*	1,300
Hanwha Q Cells*	6,400	Akcome	1,000
GCL Systems*	5,000	Phono Solar	1,000
Longi*	5,000	ET Solar	1,000
Talesun	5,000	Vikram*	1,000
Suntech/ Shunfeng*	3,300	SunPower*	900
Seraphim*	3,000	Boviet	700
First Solar*	2,200	Neo Solar Power*	670
Hareon	2,000	Tata Solar Power	500
Renesola	2,000	Waaree	500
LG*	1,650	AU Optronics	455
ZNShine	1,600	Total	80,095

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