

2015 SOLAR SCORECARD



www.solarscorecard.com

SVTC's Vision

The Silicon Valley Toxics Coalition (SVTC) believes that we still have time to ensure that the PV sector is safe for the environment, workers, and communities. SVTC envisions a safe and sustainable solar PV industry that:

- 1) Takes responsibility for the environmental and health impacts of its products throughout their life-cycles, including adherence to a mandatory policy for responsible recycling.
- 2) Implements and monitors equitable environmental and labor standards throughout product supply chains.
- 3) Pursues innovative approaches to reducing and work towards eliminating toxic chemicals in PV module manufacturing.

For over three decades, SVTC has been a leader in encouraging electronics manufacturers to take lifecycle responsibility for their products. This includes protecting workers from toxic exposure and preventing hazardous e-waste dumping in developing countries like India, Ghana, and China that lack the proper infrastructure to protect workers or the environment.

“The PV industry’s rapid growth makes it critical that all solar companies maintain the highest sustainability standards.”

The Purpose

The Scorecard is a resource for consumers, institutional purchasers, investors, installers, and anyone who wants to purchase PV modules from responsible product stewards. The Scorecard reveals how companies perform on SVTC’s sustainability and social justice benchmarks to ensure that the PV manufacturers protect workers, communities, and the environment. The PV industry’s continued growth makes it critical to take action now to reduce the use of toxic chemicals, develop responsible recycling systems, and protect workers throughout global PV supply chains. Many PV companies want to produce truly clean and green energy systems and are taking steps to implement more sustainable practices. SVTC is committed to helping these companies achieve that goal. At the same time, we need to create and enforce policies that ensure the safety and improve environmental performance of the entire sector.

the 2015 SOLAR SCORECARD

SVTC 2015 Solar Scorecard Key

Extended Producer Responsibility—20 points

To earn a sunny score, the company participates in a fully funded collection and recycling system for end-of-life PV modules produced globally; has written a letter to the Solar Energy Industry Association (SEIA) urging it to support EPR laws and regulations; supports public EPR policies in the regions where the company manufactures and sells PV modules and takes responsibility for recycling by including the “crossed out garbage bin” symbol on PV module name plates, including a PV Cycle link on the company website; and clearly describing on the website how customers can responsibly return PV modules for recycling.

Emissions Transparency—10 points

A sunny score means that the company reports all categories of emissions through its annual report, its web-site, and/or third-party auditing or government agencies. Points are awarded for reporting: chemical emissions, including chemical waste, hazardous waste disposal, and/or heavy metals; air pollutants, including NO_x, SO_x, volatile organic compounds (VOCs) and particulate matter (PC); emissions of ozone depleting substances; and information regarding landfill disposal.

Chemical Reduction Plan—5 points

A sunny score means that the company has adopted a plan to reduce chemical use per module and described it on their website or in their sustainability report.

Worker Rights, Health, and Safety—15 points

A sunny score is for companies with a formal commitment to protecting worker rights, health, and safety that goes beyond compliance with local laws and regulations. Scoring is based on commitment to improving employee wages; signage informing illiterate workers about minimum wage provisions; coverage of workforce by collective bargaining in developing countries; workday case rates; recordable incident rates; and adoption of OHSAS for 100% of facilities.

High Value Recycling—5 points

For a sunny score, a company gains points based on high value material recovery rates. Ninety-five percent of the PV module is recycled into products of similar value and quality; recycling takes place at a facility with a documented environmental management system and worker safeguards and protections consistent with ISO 14001; high value recycling is encouraged at the design stage through design for the environment (DfE) training programs.

Supply Chain—10 points

To earn a sunny score, a company purchases from suppliers that report all chemical emissions for all tiers; Has an enforceable commitment from suppliers to protect workers and the environment.

Module Toxicity—10 points

For a sunny score, a company makes available to its customer PV modules that do not contain toxic heavy metals (no more lead or cadmium than allowed under RoHS).

Biodiversity—5 points

A sunny score for biodiversity indicates zero direct impact on wildlife or biodiversity. Scoring includes zero “take permits” for endangered, threatened or special concern animals in the US; No species of special concern present at project sites; no significant impacts on biodiversity in protected areas or on areas of high biodiversity outside protected areas.

Energy Use and Greenhouse Gas (GHG)

Emissions—5 points

A sunny score is for companies that report energy use, GHG emissions, and perfluorocarbon emissions; they also report GHGs and/or energy use to a third party.

Water—5 points

A sunny score in this category means the company recognizes the importance of reducing impacts on water resources. Companies report the volume of water use; report the volume of wastewater generated and submit reports that include several water quality indicators.

Prison Labor—5 points

For a sunny score, company has an explicit policy forbidding prison labor. Points are earned by providing the prison labor policy to SVTC or posting it on the company website; or declaring on previous SVTC surveys that the company does not use prison labor.

Conflict Minerals—5 points

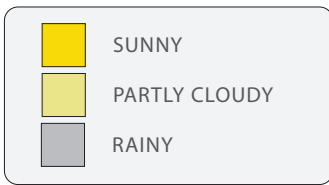
A sunny score means that the company has done due diligence and can confirm with reasonable certainty that they do not use conflict minerals from the Democratic Republic of the Congo (DRC), Angola, Burundi, Central African Republic, Malawi, Republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia as per the guidance outlined by the OECD, and that documentation can be produced. Companies can also earn points by starting the due diligence process.

2015 SOLAR SCORECARD



2015 Industry Avg. = 48

2015 Industry Leadership = 87



Company		EPR	High Value Recycling (C2C)	Emissions Transparency	Chemical Reduction Plan	Worker Rights, Health, Safety	Supply Chains	Module Toxicity	Biodiversity	Energy & GHGs	Conflict Minerals	Water	Prison Labor	2015 Total Score	2014 Total Score	
Maximum Score		20	5	10	5	15	10	10	5	5	5	5	5	100	100	
2015 LEADERS	SunPower	18	4	10	5	15	10	10	5	5	5	5	5	97	88	
	SolarWorld	18	4	10	5	15	10	7	5	5	5	5	5	94	73	
	Trina	16	4	10	5	15	8	10	5	5	5	5	5	93	92	
AVERAGE	REC	16	4	6	5	13	8	10	5	2	5	5	3	82	71	
	Yingli	16	4	2	5	10	10	10	5	5	5	3	5	80	81	
	JA Solar	11	2	10	5	15	6	10	5	2	5	3	3	77	10	
	AUO	7	4	10	5	15	5	0	5	2	5	5	5	68	-	
	LG	8	4	0	5	15	6	0	5	4	5	5	5	62	50	
	First Solar	12	4	6	5	9	7	0	3	5	3	2	3	59	56	
	Upsolar	14	4	2	0	8	10	0	5	4	3	5	3	58	56	
	Axitec	7	4	0	0	13	6	10	5	2	5	0	3	55	55	
	Kyocera	7	4	9	0	10	5	0	5	2	3	5	5	55	18	
	Mitsubishi	4	4	4	5	4	7	10	5	5	0	5	0	53	42	
	Jinko	12	2	0	0	14	8	10	5	2	0	0	0	53	7	
	Panasonic	2	1	7	5	4	1	10	5	5	5	5	0	50	32	
	BELOW AVERAGE	Suntech	8	4	0	0	15	10	0	5	2	0	0	3	47	58
Avancis		8	1	0	0	6	7	10	5	0	3	0	3	43	44	
WINAICO		7	2	0	0	12	6	0	5	2	5	0	3	42	-	
Renesola		2	4	0	0	5	7	10	5	1	0	0	3	37	37	
Sharp		0	1	10	5	4	0	0	5	5	3	3	0	36	31	
LDK		4	3	0	0	7	0	10	5	0	3	0	3	35	35	
Aleo		11	4	0	0	6	0	0	5	3	0	0	3	32	31	
China Sunergy-Csun		5	2	4	5	2	5	0	5	1	0	3	0	32	26	
Calyxo		12	0	0	0	2	7	0	5	0	0	0	3	29	27	
Motech		4	1	7	0	1	0	0	5	2	0	2	3	25	14	
Solar Frontier		4	0	0	0	4	0	10	5	0	0	0	0	23	19	
Samsung		0	0	4	0	2	1	0	5	5	0	5	0	22	19	
Eurener		9	1	0	0	4	0	0	5	0	0	0	3	22	19	
Astronergy		3	2	0	0	2	5	0	5	0	0	2	0	19	19	
Solopower		5	2	0	0	2	0	0	5	0	0	0	3	17	15	
Hanwha SolarOne		3	1	0	0	1	1	0	5	5	0	0	0	16	11	
NBSolar	0	0	0	0	0	0	10	5	0	0	0	0	15	5		

Companies with a score below 15:

SunEdison
SolarGiga

Hyundai
Suniva

Hareon Solar
Miasole

Gintech
Andalay Solar

2015 Solar Scorecard Analysis

The Solar Scorecard is based on SVTC's annual survey of photovoltaic (PV) module manufacturers, as well as on prior survey responses, interviews, news stories, and publicly available data. The goal of the Scorecard is to enhance transparency around environmental health, safety, and sustainability issues for communities, workers, and the environment.

SVTC started collecting data for the Solar Scorecard in 2009 when the solar industry produced just 6.4 GW of PV modules. In 2014, the PV industry produced 45.3 GW, more than seven times the 2009 total production¹. Since 2010, 55.6% of the PV industry (based on 2014 market share) has participated in one or more SVTC survey, including eight of the top ten PV manufacturers, which produce over 50% of PV modules in 2014.

Thirteen companies representing 35.8% of the PV module market share responded to the 2015 SVTC survey. This included six of top ten PV module manufacturers. This is an increase from the 25.2 % in 2014. The Solar Scorecard saw an increase in participation by several large producers and name brand companies such as Jinko, Kyocera, JA Solar, AUO, WINAICO and LG. Annual survey participation rates continue to fluctuate between 7-15 respondents over six years due largely to the bankruptcies and/or restructuring throughout the industry.

The results compiled from SVTC's 2014 survey and research include the following:

- Over the past four SVTC surveys, 14 companies have said they would support public policy for an Extended Producer Responsibility (EPR) scheme for PV modules (Aleo, Avancis, Eurener, First Solar, REC, SolarWorld, Solon, SoloPower, SunPower, Suntech, Trina, Upsolar, Jinko and Yingli). However, at least one company's 2015 letter (SolarWorld) openly expressed concern regarding SEIA's ability to provide leadership in EPR policy development.
- Methods used by PV manufacturers to report the use of hazardous chemical to the public remains inconsistent. In 2015 only six PV manufacturers (Trina, AUO, Sharp, SolarWorld, SunPower and JA Solar) do extensive **chemical emissions disclosure and reporting** on their website. Seventeen companies report one or more categories of emissions (hazardous waste, heavy metals, air pollution, ozone depleting substances, landfill disposal). Fourteen companies manufacture PV modules with
- Fourteen companies manufacture PV modules with **amounts of cadmium or lead below regulatory thresholds set by the European Union**, the world's most stringent standard (increase from 12 companies in 2014). This means that the maximum concentration found in any homogenous material that makes up these PV modules is less than 0.01% for cadmium and 0.10% or less for lead.
- Zero companies can provide documentation to **verify** that their **supply chains do not contain conflict minerals** based on the due diligence guidelines set by the OECD. Seventeen companies are engaged in or have started the process of due diligence to determine if conflict minerals are present in their supply chains (an increase from 12 companies in 2014).
- There were no rainy scores in the biodiversity section as solar projects are operating under new regulatory guidance and collaborating with wildlife conservation organizations.

¹ http://www.pv-tech.org/news/ihs_reveals_top_15_pv_module_suppliers_of_2013

Recommended Actions

Commercial, government, or residential purchasers of PV modules are making a long-term financial and environmental commitment, and PV module manufacturers should make the same long-term commitment to the environment and worker safety.

Use this scorecard to help choose a manufacturer that is committed to high environmental and worker safety standards for PV module manufacturing.

Sponsors

