

# 2012 SOLAR SCORECARD

SOLARSCORECARD.COM | A PROJECT OF THE SILICON VALLEY TOXICS COALITION

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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.

## Silicon Valley Toxics Coalition's (SVTC) Vision

Worldwide solar photovoltaic (PV) market installations reached a record high in 2011.<sup>1</sup> This growth is encouraging since electricity generation from PV produces no greenhouse gas emissions and provides a sustainable alternative to fossil fuels. However, making PV modules can have consequences for workers and the environment throughout their life cycle from raw material extraction and procurement, to manufacturing, disposal, and recycling.

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. We need to take action now to reduce the use of toxic chemicals in PV, develop responsible recycling systems, and protect workers throughout the global PV supply chain.

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 toxic chemicals in PV module manufacturing.

For over three decades, SVTC has been a leader in encouraging electronics manufacturers to take life cycle 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 adequate systems to protect worker health and safety. SVTC also seeks to stop the practice of sending e-waste to U.S. prisons for dismantling, which results in toxic exposure to inmates.

We now have a limited window of opportunity to ensure that solar PV does not follow the electronics industry's toxic and unsustainable path.

## The Purpose

The Scorecard is a resource for consumers, institutional purchasers, investors, 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 rapid 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 of workers and improve environmental performance of the entire sector. The following pages provide a sample of companies that were scored and the more than 40 questions from the SVTC solar survey. The full survey and results can be viewed at [www.solarscorecard.com](http://www.solarscorecard.com)

1 - <http://www.solarbuzz.com/our-research/recent-findings/world-solar-photovoltaic-market-grew-274-gigawatts-2011-40-yy>

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See below for a sample of the survey. To view the full survey, go to [www.solarscorecard.com](http://www.solarscorecard.com).

		Canadian Solar	First Solar*	Hanwha SolarOne	Jinko	LDK	Panasonic
<b>Overall score</b>		<b>2</b>	<b>74</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>28</b>
Manufacturing locations		China	USA Germany Malaysia	Korea	China	China	Malaysia Japan
<b>EPR</b>	Company publicly supports public policies for extended producer responsibility (EPR)?	--	Yes	--	--	--	Yes
	Waste or scrap PV modules are recycled at a facility with a documented environmental management system and worker safeguards consistent with ISO 14001?	--	Yes	--	--	--	--
	Company performed a hazardous waste determination for PV modules?	--	Yes	--	--	--	--
<b>WORKERS' RIGHTS, HEALTH AND SAFETY</b>	Company currently does not use prison labor (e.g., UNICOR) during any aspect of the product life cycle?	--	Yes	--	--	--	--
	Company manufacturing operations are certified with code of conduct in alignment with Social Accountability International (SA8000)?	--	--	--	--	--	--
	Company discloses the percentage of employees that manufacture their brand name products and that are paid more than minimum wage for that region/country?	--	Yes	--	--	--	--
<b>CHEMICAL USE AND DISCLOSURE</b>	Company posts chemical emissions to the environment on their website and/or annual report?	--	Yes	--	--	--	Yes
	Company posts annual volume of wastewater discharged on their website and/or annual report?	--	--	--	--	--	Yes
<b>SUPPLY CHAIN TRANSPARENCY</b>	Company has a code of conduct with their suppliers in alignment with the principles of Social Accountability International (SA8000)?	--	Yes	--	--	--	--
	Company is willing to publicly disclose contract manufacturing network on an annual basis?	--	Yes	--	--	--	--
<b>LIFE CYCLE ANALYSIS</b>	Company conducts a life cycle analysis on their PV modules?	--	Yes	--	--	--	Yes
	Company has set a "zero waste" and/or annual waste diversion targets for PV modeling facilities?	--	Yes	--	--	--	Yes

SVTC would like to thank the following companies for responding to our survey: Aleo Solar, Avancis, First Solar, Those that are not listed here can be seen on the website - [www.solarscorecard.com](http://www.solarscorecard.com)

\*The company names listed in green represent companies that responded to the Scorecard survey. Companies that did not respond to the survey (names shown in black), were scored based on information provided on their website.

	REC*	Renesola	Schott	Sharp	SolarWorld*	SunPower*	Suntech*	Trina Solar*	Yingli*
	87	11	2	9	91	93	86	94	88
	Singapore	China	Germany China, USA Czech Republic	USA UK	USA Germany	Malaysia, Mexico, Philippines	China, USA	China	China
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	--	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	--	Yes	Yes	--
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	--	--	--	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	--	--	Yes	Yes	--	Yes	Yes

Motech, REC, Scheuten, Solar, SolarWorld, Solon, SoloPower, Sovello, SunPower, Suntech, Trina, and Yingli.

## PV Industry Trends

In 2012 51.1 percent of the industry market share—based on PV module shipment statistics for 2011—responded to SVTC's Solar Scorecard survey. We hope that their example will encourage even greater participation next year.

Here are some of SVTC's findings on PV industry trends. Please go to [solarscorecard.com](http://solarscorecard.com) for complete analysis.

## ANALYSIS OF 14 SURVEYS REPRESENTING 51.1 PERCENT OF THE PV INDUSTRY MARKET SHARE

### Extended Producer Responsibility

Thirteen of fourteen companies surveyed publicly support public policies for Extended Producer Responsibility.

Twelve of fourteen companies have information on their website that explains where to recycle PV modules.

### Workers' Rights, Health, and Safety

Zero percent of companies use prison labor. Eight companies (Aleo Solar, Avancis, REC, SunPower, SolarWorld, Solon, Suntech, Trina, Yingli) now have explicit policies forbidding this practice.

Eleven of fourteen companies have a code of conduct in place at their manufacturing operations to ensure that working conditions are free from child or forced labor, provide a safe and healthy living environment, and comply with local laws for collective bargaining, working hours, discrimination, and compensation. Yingli has certified their operations by the Social Accountability standard (SA8000). Suntech has certified their main operations.

### Disclosure of Chemical Use and Emissions

Four companies report their air pollution emissions on their websites or annual/sustainability reports (Trina, Yingli, REC, SolarWorld).

Eight of fourteen PV module manufacturers post greenhouse gas emissions on their websites or annual/sustainability reports.

### Supply Chains

Twelve of fourteen companies have a code of conduct with their suppliers to ensure that working conditions are free from child or forced labor, provide a safe and healthy living environment, and comply with local laws for collective bargaining, working hours, discrimination, and compensation.

Zero companies can verify that their supply chains do not contain conflict minerals based on the due diligence guidelines set by the Organization for Economic Co-operation and Development (OECD).

### Sustainability and Life Cycle Analysis

All of the PV companies have conducted some type of life cycle analyses of their PV modules in at least one of the following impact categories: energy payback time (12 companies), greenhouse gases (12), toxicity (6), and criteria air pollutants (4).

Six of fourteen companies have set zero waste and/or annual waste diversion goals to keep materials from their facilities out of landfills.

## Recommended Actions

Commercial, government, and residential purchasers of PV modules are making a long-term financial and environmental commitment. 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.

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