EPEAT Disclosure Report 2025

November 2025

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The following EPEAT disclosure report was prepared for conformance to the ANSI/NSF 457 Sustainability Leadership Standard.

1. Substances of Very High Concern (Criterion 5.2.1)

First Solar Series 6, Series 6 Plus, Series 6 Plus Bifacial, and Series 7 PV modules consist of four articles: glass module, junction box, cable, and frame/rail. These articles do not contain substances on the Candidate List of Substances of Very High Concern (SVHC) as defined by EU REACH regulation (revision date: Nov. 19, 2024) above 0.1% by weight per article.

2. Life Cycle Assessment (Criterion 7.1.2 and 7.2.1)

First Solar conducted a life cycle assessment (LCA) of its Series 6 PV modules, which was published in the IEEE Journal of Photovoltaics: https://ieeexplore.ieee.org/document/8305539 (https://doi.org/10.1109/PVSC.2017.8366638doi: 10.1109/JPHOTOV.2018.2802786), in accordance with the requirements of the European Union Product Environmental Footprint Guide. A copy of the conference paper is available on First Solar's website and includes an overview of identified life cycle hotspots: https://www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/Sustainability-Studies/PVSC_44_Addressing-Hotspots-in-the-Product-Environmental-Footprint-of-CdTe-PV.pdf

The LCA quantifies the following mid-point indicators according to ILCD 2011 for First Solar Series 4 modules and First Solar Series 6 modules as follows:

3kWp installation, roof mounted (total all life stages, recycling benefits included)			
Impact category	Unit per kWh DC electricity	First Solar Series 4	First Solar Series 6
Climate change	kg CO2 eq	1.94E-02	1.66E-02
Ozone depletion	kg CFC-11 eq	8.78E-10	9.47E-10
Human toxicity, non-cancer effects	CTUh	4.95E-09	5.11E-09
Human toxicity, cancer effects	CTUh	5.97E-10	5.16E-10
Particulate matter	kg PM2.5 eq	9.95E-06	7.72E-06
Ionizing radiation HH	kBq U235 eq	9.06E-04	7.83E-04
Photochemical ozone formation	kg NMVOC eq	7.43E-05	5.62E-05
Acidification	molc H+ eq	1.46E-04	1.10E-04
Terrestrial eutrophication	molc N eq	2.76E-04	2.07E-04
Freshwater eutrophication	kg P eq	3.60E-06	3.51E-06
Marine eutrophication	kg N eq	2.54E-05	1.91E-05
Freshwater ecotoxicity	CTUe	7.63E-02	7.50E-02
Land use	kg C deficit	1.19E-02	8.61E-03
Water resource depletion	m3 water eq	7.83E-05	6.07E-05
Mineral, fossil & ren resource depletion	kg Sb eq	3.09E-06	2.58E-06
Cumulative energy demand non renewable	MJ	2.90E-01	2.47E-01
Cumulative energy demand renewable	MJ	3.63E+00	3.62E+00
Nuclear waste	m3 HAA eq	2.12E-11	1.84E-11

First Solar conducted a life cycle assessment (LCA) of its Series 7 PV modules, which was published in EPD Norge: https://www.epd-norge.no/epder/bygg/solcellepaneler-og-komponenter/first-solar-series-7-photovoltaic-module, in accordance with ISO 14025 and EN15804 +A2. The Series 7 EPD includes an overview of identified life cycle hotspots (p. 13).

The LCA quantifies the following mid-point indicators according to EN15804 +A2 for First Solar Series 7 modules as follows:

Core environmental impact indicators

Indicator	Unit	A1-A3[3]	A4[3]	A5	B2	B4	C1	C2[4]	C3[4]	D
GWP-total	kg CO2 eq.	2.35E-01	2.17E-02	1.69E-03	5.61E-05	2.40E-03	1.26E-04	4.36E-02	1.51E-02	-6.42E-02
GWP-fossil	kg CO2 eq.	2.33E-01	2.17E-02	1.29E-03	5.26E-05	2.38E-03	1.17E-04	4.34E-02	1.36E-02	-6.38E-02
GWP-biogenic	kg CO2 eq.	1.06E-03	1.86E-05	4.01E-04	3.43E-06	1.14E-05	8.57E-06	1.18E-04	1.46E-03	-2.99E-04
GWP-LULUC	kg CO2 eq.	2.35E-04	1.32E-05	1.38E-06	6.97E-08	2.20E-06	2.88E-07	2.19E-05	1.91E-05	-2.61E-05
ODP	kg CFC11 eq.	3.13E-09	3.30E-10	2.06E-11	1.16E-12	3.77E-11	2.20E-12	9.21E-10	5.83E-10	-1.04E-09
AP	mol H^+ eq.	1.59E-03	2.62E-04	8.34E-06	2.51E-07	1.57E-05	6.61E-07	9.20E-05	4.07E-05	-2.18E-04
EP-freshwater	kg P eq.	1.42E-05	1.60E-07	7.33E-08	2.88E-09	1.26E-07	1.14E-08	3.57E-07	2.17E-06	-1.61E-06
EP-marine	kg N eq.	3.01E-04	6.50E-05	1.67E-06	4.57E-08	3.21E-06	8.30E-08	2.23E-05	7.79E-06	-8.00E-05
EP-terrestial	mol N eq.	3.56E-03	7.15E-04	1.92E-05	5.17E-07	3.70E-05	9.68E-07	2.32E-04	7.73E-05	-4.68E-04
POCP	kg NMVOC eq.	1.02E-03	2.15E-04	5.84E-06	1.87E-07	1.12E-05	3.11E-07	1.42E-04	2.60E-05	-1.79E-04
ADP-M&M[2]	kg Sb eq.	2.94E-06	5.16E-08	1.30E-08	3.30E-10	2.38E-08	1.40E-09	1.48E-07	4.86E-08	-5.47E-07
ADP-fossil[2]	MJ	2.83E+00	2.85E-01	1.73E-02	8.07E-04	3.00E-02	2.62E-03	6.00E-01	2.04E-01	-5.70E-01
WDP[2]	m^3	4.63E-02	1.03E-03	2.41E-04	4.55E-03	4.31E-04	2.98E-05	2.42E-03	7.72E-03	-1.49E-02

GWP-total: Global Warming Potential; **GWP-fossil:** Global Warming Potential fossil fuels; **GWP-biogenic:** Global Warming Potential biogenic; **GWP-LULUC:** Global Warming Potential land use and land use change; **ODP:** Depletion potential of the stratospheric ozone layer; **AP:** Acidification potential, Accumulated Exceedance; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq. **EP-marine:** Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-terrestial:** Eutrophication potential, Accumulated Exceedance; **POCP**: Formation potential of tropospheric ozone; **ADP-M&M**: Abiotic depletion potential for non-fossil resources (minerals and metals); **ADP-fossil:** Abiotic depletion potential for fossil resources; **WDP:** Water deprivation potential, deprivation weighted water counsumption

Additional environmental impact indicators

Indicator	Unit	A1-A3[3]	A4[3]	A5	B2	B4	C1	C2[4]	C3[4]	D
PM	Disease incidence	1.34E-08	1.02E-09	6.64E-11	2.76E-12	1.31E-10	2.00E-12	2.36E-09	2.26E-10	-2.43E-09
IRP[1]	kBq U235 eq.	6.70E-03	8.78E-05	5.29E-05	5.09E-06	5.89E-05	2.37E-05	3.29E-04	7.18E-04	-5.77E-04
ETP-fw[2]	CTUe	1.96E+00	1.62E-01	9.55E-03	2.05E-04	1.91E-02	2.62E-04	3.20E-01	7.23E-02	-4.42E-01
HTP-c[2]	CTUh	2.82E-10	9.48E-12	1.23E-12	1.92E-13	2.39E-12	5.42E-14	1.97E-11	4.92E-12	-1.00E-10
HTP-nc	CTUh	5.18E-09	2.26E-10	2.64E-11	2.54E-12	4.86E-11	2.32E-12	5.40E-10	4.92E-10	-9.66E-10
SQP[2]	Dimensionless	1.27E+00	1.23E-01	7.08E-03	2.53E-04	1.35E-02	5.11E-04	3.40E-01	3.19E-02	-1.94E-01

PM: Particulate matter emissions; **IRP:** Ionising radiation, human health; **ETP-fw:** Ecotoxicity (freshwater); **ETP-c:** Human toxicity, cancer effects; **HTP-nc:** Human toxicity, non-cancer effects; **SQP:** Land use related impacts / soil quality

3. Material Recovery Targets (Criterion 9.1.3)

First Solar's high-value PV recycling process recovers more than 90% of a First Solar module for reuse in new First Solar modules, glass products and rubber products. Approximately 90% of the glass and more than 90% of the semiconductor material and more than 90% of other metals are recovered at end-of-life.

First Solar PV Module Recycling Material Recovery Achievements	
Glass	= 90 mass-%
Metals (not including semiconductor materials)	≥ 90 mass-%
Semiconductor Materials	≥ 90 mass-%

4. Corporate Reporting (Criterion 11.2.1)

Key Performance Indicators	Reference Source of Key Performance Indicator			First Solar		
	GRI Standards [14]	SASB solar energy sustainability accounting standard[30]	SEIA Commitment[2] [8]	2023	2024	Boundary
PV modules produced in MW DC in reporting period	2-6	RR-ST-000.A	Included	12,100	15,500	Manufacturing (Global)
Recycled input materials used (%)	301-2			0% - 37%	1.4% - 37%	Semiconductor material (Global)
Standards, methodologies, assumptions, and/or calculation tools used				Disclosed recycled input materials in 2023 and 2024 are limited to semiconductor material and are based on actual data provided by suppliers.		
Energy consumption within the organization	302-1	RR-ST-130a.1	Included	1,449,109 MWh (5,216,792 GJ)	1,782,056 MWh (6,415,402 GJ)	Global (equity share)
Total fuel consumption from non-renewable sources	302-1	RR-ST-130a.1		56,869 MWh (204,728 GJ)	86,206 MWh (310,342 GJ)	Global (equity share)
Natural gas	302-1	RR-ST-130a.1		56,078 MWh (204,728 GJ)	85,850 MWh (309,060 GJ)	Global (equity share)
Diesel/Gas oil	302-1	RR-ST-130a.1		636 MWh (2,289 GJ)	356 MWh (1,282 GJ)	Global (equity share)
Motor Gasoline	302-1	RR-ST-130a.1		155 MWh (558 GJ)	0 MWh (0 GJ)	Global (equity share)
Consumption of self-generated non-fuel renewable energy- onsite solar	302-1	RR-ST-130a.1		7,532 MWh (27,115 GJ)	6,761 MWh (24,340 GJ)	Global (equity share)
Consumption of purchased electricity	302-1	RR-ST-130a.1		1,384,708 MWh (4,984,949 GJ)	1,689,089 MWh (6,080,720 GJ)	Global (equity share)
Standards, methodologies, assumptions, and/or calculation tools used				Energy data is based on electricity bills from our manufacturing facilities in Ohio, Alabama, Malaysia, Vietnam, and India, as well as our R&D facility in California and our recycling facility in Germany. Solar generation data is provided by the respective facilities. Emission factors are sourced from the US EPA and the IEA, and conversion factors follow the WRI		

				GHG Protocol. Heating, steam, and cooling from both renewable and non-renewable sources are not applicable, and fuel from renewable sources is also not applicable.		
Energy consumption in manufacturing	302-1	RR-ST-130a.1		1,376,981 MWh (4,957,131 GJ)	1,606,674 MWh (5,784,026 GJ)	Manufacturing (Global)
Grid electricity consumed (%)		RR-ST-130a.1		96%	95%	Global (equity share)
Renewable energy consumed-onsite solar (%)		RR-ST-130a.1		1%	0.4%	Global (equity share)
Manufacturing Energy Intensity (kWh per Watt Produced)	302-3			0.11	0.10	Manufacturing (Global)
Standards, methodologies, assumptions, and/or calculation tools used				Data includes total energy consumption (electricity and fuel) from global manufacturing operations, expressed on a per watt produced basis. The ratio reflects energy consumed within the organization.		
Total water withdrawal from all sources (megaliter or thousand m^3)	303-3	RR-ST-140a.1	Included	3,859	4,673	Manufacturing, Recycling and R&D (Global)
Total water consumption from all sources (megaliter or thousand m^3)	303-5	RR-ST-140a.1	Included	2,158	2,548	Manufacturing, Recycling and R&D (Global)
Standards, methodologies, assumptions, and/or calculation tools used				All water withdrawals come from local municipal suppliers (third-party/freshwater). Data is based on water bills. In India, we operate a net-zero PV manufacturing water withdrawal facility, which relies entirely on tertiary-treated reverse osmosis water from the city's sewage treatment plant for its process water, with zero wastewater discharge. We used the WWF Risk Filter Tool and defined water-stressed areas as those with baseline water stress equal to or greater than 'High'(40-80%). For information on our water management approach, please refer to our Corporate Responsibility Report and CDP response.		
Direct GHG emissions-Scope 1 (MT CO_2eq)	305-1		Included	11,638	16,593	Global (equity share)
Standards, methodologies, assumptions, and/or calculation tools used				Data includes all greenhouse gases. Calculations are based on published criteria, such as emission factors and Global Warming Potential (GWP) rates from the EPA (2024) and IPCC Fifth Assessment Report (AR5–100		

				year). Biogenic emissions are not applicable. For comparison purposes, the base year scope 1 emissions in 2020 were 7,037 MT CO2eq. The base year was recalculated in 2020 from 2008. Consolidation approach is based on equity share.		
Energy indirect GHG emissions-Scope 2 Market-Based (MT CO2eq)	305-2		Included	776,502	919,451	Global (equity share)
Standards, methodologies, assumptions, and/or calculation tools used				Data includes all greenhouse gases for market-based Scope 2 emissions. Calculations are based on published criteria, including emission factors and Global Warming Potential (GWP) rates from the EPA (2024), IEA (2022), (and IPCC Fifth Assessment Report (AR5–100 year). For comparison, base year scope 2 emissions in 2020 were 344,697 MT CO2eq. The base year was recalculated in 2020 from 2008. Biogenic emissions are not applicable. Consolidation approach is based on equity share.		
Waste by type and disposal method	306-3 306-4 306-5	RR-ST-150a.1	Included	Sustainability Report (pg. 81-82)	Corporate Responsibility Report (pg. 38)	Manufacturing (Global)
Standards, methodologies, assumptions, and/or calculation tools used				Data includes total weight of waste disposed (landfill, incineration, or other disposal) and total weight of waste diverted from disposal (recycled, reused, or recovered by other operations) by type (hazardous or non-hazardous) in accordance with 2020 GRI standards. Waste disposal method is determined by information provided by the waste disposal contractor. 100% of waste directed to disposal and diverted from disposal occurs onsite.		
Type of injury and rates of injury, lost days, and absenteeism, and number of work-related fatalities	403-9		Included	Sustainability Report (pg. 83)	Corporate Responsibility Report (pg. 76)	Global (manufacturing and offices)
First Solar Work-Related Recordable Injury Rate (per 200,000 hours)	403-9			0.58	0.53	Global (manufacturing and offices)
Number of recordable work-related injuries	403-9		Included	42	46	Global (manufacturing and offices)
Rate of High-Consequence Work-	403-9			0	0	Global (manufacturing and offices)

Related Injuries (excluding fatalities)						
Number of High-Consequence Work-Related Injuries (excluding fatalities)	403-9			0	0	Global (manufacturing and offices)
Number and Rate of Work-Related Fatalities	403-9			0	0	Global (manufacturing and offices)
Occupational diseases	403-9		Included	0	0	Global (manufacturing and offices)
Standards, methodologies, assumptions, and/or calculation tools used				Safety data includes all full-time, part-time, and temporary employees as well as interns at all global manufacturing, R&D and office locations. There are no workers who are not employees but whose work and/or workplace is controlled by the organization. Rates of injury are calculated per 200,000 hours. First Solar's manufacturing data covers all processes (from the beginning of the manufacturing process to the finished module) and includes all of the company's manufacturing facilities in the U.S. (Alabama and Ohio), Malaysia, Vietnam, and India. First Solar's advanced thin film modules are manufactured in a high-throughput, automated environment that integrates all manufacturing steps into a continuous flow operation under one roof. First Solar's safety management system hazard identification and risk assessment process identified the following hazards that have the potential for serious injury or fatality: confined space entry, electrical exposure and arc flash, line of fire, lock out/tag out, machine guards, vehicle collision, working with a suspended load, and working at heights. First Solar has developed EHS Design Requirements for new equipment that includes equipment and machine safety requirements. Training and procedures are in place to identify and control potential hazards.		

5. Corporate Reporting (Criterion 11.2.2)

Key Performance Indicators	Reference Source of Key Performance Indicator			First Solar		
	GRI Standards[14]	**SASB solar energy sustainability accounting standard**[30]	**SEIA Commitment**[28]	**2023**	**2024**	**Boundary**
Reduction of energy consumption	302-4			12,245 MWh (44,082 GJ)	22,330 MWh (80,388 GJ)	Global Manufacturing (electricity)
Standards, methodologies, assumptions, and/or calculation tools used				In 2024, our global energy conservation projects resulted in annual savings of 22,330 MWh.		
Water withdrawn in water stressed areas (megaliter or thousand m^3)	303-3	RR-ST-140a.1 (or WBSCD Global Water Tool[40])		325 (8%)	(514) (11%)	Manufacturing, Recycling and R&D (Global)
Water withdrawn in water stressed areas (%)		RR-ST-140a.1		0.06%	0.04%	Manufacturing, Recycling and R&D (Global)
Water consumed in water stressed areas (%)		RR-ST-140a.1		0.04%	0.03%	Manufacturing, Recycling and R&D (Global)
Standards, methodologies, assumptions, and/or calculation tools used				While our PV manufacturing facilities in the US, Malaysia, and Vietnam operate in areas with low to very low baseline water stress, our manufacturing facility near Chennai in Tamil Nadu, India, (which began operating in 2023) faces high baseline water stress. To minimize impacts on local water resources, we operate a net-zero water withdrawal PV manufacturing facility in India, which relies entirely on tertiary treated reverse osmosis water from the city's sewage treatment plant for its process water with zero wastewater discharge. Although 11% of our operations were in water-stressed locations in 2024, only 0.04% of our water withdrawals came from water-stressed areas. We used the WWF Risk Filter Tool and defined stressed areas as having baseline water stress that is equal to/greater than 'High': 40-80%. For information on our water management approach, please see our 2025 Corporate Responsibility Report and CDP response. 100% of our withdrawals come from local municipal suppliers (third-party/ freshwater or wastewater).		
Water recycled and reused (megaliter or thousand m^3)				318	619	Manufacturing, Recycling and R&D (Global)
Standards, methodologies, assumptions, and/or calculation tools used				We measure the amount of water recycled at our manufacturing and recycling facilities in Malaysia, Ohio, Alabama, Vietnam, India, and Germany, which represented 99.9% of our water		

				withdrawals in 2023 and 2024. In total, we recycled 619 million liters of water in 2024, equivalent to approximately 7% of our absolute water use.		
GHG emissions intensity (metric tons of CO2-eq / MW produced)	305-4			65	60	Global (equity share)
Standards, methodologies, assumptions, and/or calculation tools used				In 2023 and 2024, our GHG emissions intensity includes direct (scope 1) and indirect (scope 2) emissions of all manufacturing, recycling plants, and R&D facilities on a carbon intensity basis measured per megawatt (MW) of PV modules produced. All GHGs are included in the calculations.		
Reduction of GHG emissions (metric tons CO2-eq)	305-5			Scope 1: 0 Scope 2: 7,779	Scope 1: 0 Scope 2: 11,845	Global Manufacturing (electricity)
Standards, methodologies, assumptions, and/or calculation tools used				The annual Scope 1 and 2 GHG emissions reductions are reported in accordance with WRI/WBCSD GHG Protocol using previous year as baseline, in order to show annual progress. In 2024, our global energy conservation projects (e.g., VFD retrofits, compressed-air optimization, chiller consolidation) resulted in annual savings of 22,330 MWh and scope 2 emissions reduction of approximately 12,000 metrics tons of CO_2eq. In 2023, we implemented several projects to reduce emissions, including reducing the consumption of compressed dry air (CDA), installing a heat exchanger for the CDA inlet of air dryers, replacing LED lighting in the canteen, increasing the temperature in the facility, and installing motion sensors for sanitary facilities, and improving panel wattage, which collectively resulted in a reduction of 7,779 metric tons CO2eq.		
Product Recycling Program in Place	301-2 301-3	RR-ST-410b.2 RR-ST-410b.4	Included	Yes	Yes	Global

First Solar's manufacturing data covers all processes (from the beginning of the manufacturing process to finished module) and includes all of the company's operational manufacturing facilities in the U.S. (Ohio, Alabama), Malaysia, Vietnam, and India. First Solar's advanced thin film modules are manufactured in a high-throughput, automated environment that integrates all manufacturing steps into a continuous flow operation under one roof.

6. Reporting on screening of Tier 1 suppliers (11.2.3)

In 2024, First Solar assessed 100% of our tier 1 suppliers that provide materials and components for manufacturing and 100% of our new suppliers using social and environmental criteria. All of our major suppliers, including on-site service providers, complete an RBA Self-Assessment Questionnaire (SAQ) on

an annual basis. We leverage third-party tools and indexes on global slavery, forced labor, and other environmental, social, and governance aspects to identify high-risk suppliers based on industry, geography, and spend. For more information, please refer to page 44 – 47 of our 2025 Corporate Responsibility Report.

7. Public Disclosure of Use of Conflict Minerals in Products (Criterion 11.4.1)

First Solar is committed to responsible sourcing and operating a supply chain free of conflict minerals. First Solar's Specialized Disclosure and Conflict Minerals reports are available on our public website (see "Specialized Disclosure" tab in SEC Filings).