First Solar Inc

2024 CDP Corporate Questionnaire 2024

Word version

Important: this export excludes unanswered questions
This document is an export of your organization's CDP questionnaire response. It contains all data points for questions that are answered or in progress. There may be questions or data points that you have been requested to provide, which are missing from this document because they are currently unanswered. Please note that it is your responsibility to verify that your questionnaire response is complete prior to submission. CDP will not be liable for any failure to do so.
Terms of disclosure for corporate questionnaire 2024 - CDP

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11/14/2024, 09:57 pm

Contents

C1. Introduction

(1.1) In which language are you submitting your response?

Select from:

☑ English

(1.2) Select the currency used for all financial information disclosed throughout your response.

Select from:

☑ USD

(1.3) Provide an overview and introduction to your organization.

(1.3.2) Organization type

Select from:

☑ Publicly traded organization

(1.3.3) Description of organization

First Solar is a leading American solar technology company and a global provider of responsibly produced, eco-efficient solar modules, advancing the fight against climate change. We are unique among the world's largest solar manufacturers as the only U.S.-headquartered company that does not use crystalline silicon (c-Si) semiconductors. Developed in R&D labs in California and Ohio, First Solar's advanced thin-film photovoltaic (PV) modules represent the next generation of solar technologies, offering a competitive, high-performance, lower-carbon alternative to conventional c-Si PV panels. From raw material sourcing and manufacturing to end-of-life module recycling, First Solar's technology embodies sustainability and responsibility toward people and the planet. Headquartered in Tempe, Arizona, First Solar operates regional offices around the world, with a global manufacturing footprint in the United States, Malaysia, Vietnam, and India. Our annual manufacturing capacity has grown from 1.5 megawatts (MW) in 2002 to 16.6 gigawatts (GW) as of December 31, 2023. We currently operate the Western Hemisphere's largest solar manufacturing footprint and are in the process of expanding to reach an expected 14 GW of annual nameplate capacity in the United States and over 25 GW worldwide by the end of 2026. To learn more, please visit www.firstsolar.com
[Fixed row]

(1.4) State the end date of the year for which you are reporting data. For emissions data, indicate whether you will be providing emissions data for past reporting years.

	End date of reporting year	Alignment of this reporting period with your financial reporting period	Indicate if you are providing emissions data for past reporting years
	12/31/2023	*Select from:* ☑ Yes	*Select from:* ☑ No

[Fixed row]

(1.4.1) What is your organization's annual revenue for the reporting period?

3318602000

(1.5) Provide details on your reporting boundary.

	Is your reporting boundary for your CDP disclosure the same as that used in your financial statements?
	Select from: ☑ Yes

[Fixed row]

(1.6) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

ISIN code - bond

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

ISIN code - equity

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

US3364331070

CUSIP number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

336433107

Ticker symbol

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

FSLR

SEDOL code

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

LEI number

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

D-U-N-S number

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

Other unique identifier

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No
[Add row]

(1.7) Select the countries/areas in which you operate.

Select all that apply

☑ India
☑ Samoa
☑ Germany
☑ Malaysia
☑ Viet Nam
☑ United States of America

(1.8) Are you able to provide geolocation data for your facilities?

	Are you able to provide geolocation data for your facilities?	Comment
	Select from: ☑ Yes, for all facilities	*Please find geolocation data in 1.8.1*

[Fixed row]

(1.8.1) Please provide all available geolocation data for your facilities.

Row 1

(1.8.1.1) Identifier

Ohio 1, Ohio 2 and 3 (Perrysburg and Walbridge, Ohio)

(1.8.1.2) Latitude

41.56184

(1.8.1.3) Longitude

-83.52746

(1.8.1.4) Comment

Manufacturing plants, R&D facilities and administrative offices

Row 3

(1.8.1.1) Identifier

First Solar Malaysia Sdn. Bhd. Lot PT 2486, First Solar Boulevard (Jalan Hi-Tech 11), Zon Industri Fasa 3, Kulim Hi-Tech Park, 09090 Kulim, Kedah Darul Aman, Malaysia

(1.8.1.2) Latitude

5.426483

(1.8.1.3) Longitude

100.57123

(1.8.1.4) Comment

Manufacturing plants and administrative offices

Row 4

(1.8.1.1) Identifier

First Solar Vietnam Manufacturing Co., Ltd Lot A1 & A2, D10 Street, Dong Nam Industrial Park, Binh My Commune 700000 Cu Chi District, Ho Chi Minh City Vietnam

(1.8.1.2) Latitude

10.96873

(1.8.1.3) Longitude

106.6293

(1.8.1.4) Comment

Manufacturing plant

Row 6

(1.8.1.1) Identifier

First Solar Manufacturing GmbH – Recycling Facility Marie-Curie-Straße 3 15236 Frankfurt (Oder) Germany

(1.8.1.2) Latitude

52.30802

(1.8.1.3) Longitude

14.47758

(1.8.1.4) Comment

Recycling plant

Row 7

(1.8.1.1) Identifier

FS INDIA SOLAR VENTURES PVT LTD SIPCOT INDUSTRIAL PARK PILLAIPAKKAM PLOT NO. A-1 1 KANCHIPURAM 602105 Tamil Nadu, India

(1.8.1.2) Latitude

12.95688

(1.8.1.3) Longitude

79.97235

(1.8.1.4) Comment

Manufacturing plant

Row 8

(1.8.1.1) Identifier

1035 Walsh Ave, Santa Clara, CA

(1.8.1.2) Latitude

37.37162

(1.8.1.3) Longitude

-121.95251

(1.8.1.4) Comment

R&D Facility

Row 9

(1.8.1.1) Identifier

Mesa Test Site: 7931 E Pecos Rd Ste 186, Mesa, Az 85212

(1.8.1.2) Latitude

33.28334

(1.8.1.3) Longitude

-111.662012

(1.8.1.4) Comment

Test Site
[Add row]

(1.24) Has your organization mapped its value chain?

(1.24.1) Value chain mapped

Select from:
☑ Yes, we have mapped or are currently in the process of mapping our value chain

(1.24.2) Value chain stages covered in mapping

Select all that apply
☑ Upstream value chain
☑ Downstream value chain

(1.24.3) Highest supplier tier mapped

Select from:
☑ Tier 4+ suppliers

(1.24.4) Highest supplier tier known but not mapped

Select from:
☑ All supplier tiers known have been mapped

(1.24.7) Description of mapping process and coverage

At First Solar, we take a comprehensive approach to responsible sourcing from our policy, supplier contracts, screening, mapping and auditing, to training and reporting. We regularly map our supply base and conduct an annual risk assessment. We have mapped/documented all provided/known sub tiers, and some go to the Tier 4 level. As part of First Solar's supplier qualification process, suppliers are required to fill out the Advanced Supplier Readiness form. Among other requirements, suppliers must submit detailed information on their raw material supply base with a supply chain map which includes as many sub-tiers as possible.

[Fixed row]

(1.24.1) Have you mapped where in your direct operations or elsewhere in your value chain plastics are produced, commercialized, used, and/or disposed of?

(1.24.1.1) Plastics mapping

Select from:

☑ Yes, we have mapped or are currently in the process of mapping plastics in our value chain

(1.24.1.2) Value chain stages covered in mapping

Select all that apply

☑ Upstream value chain

☑ Downstream value chain

☑ End-of-life management

(1.24.1.4) End-of-life management pathways mapped

Select all that apply

☑ Recycling

[Fixed row]

C2. Identification, assessment, and management of dependencies, impacts, risks, and opportunities

(2.1) How does your organization define short-, medium-, and long-term time horizons in relation to the identification, assessment, and management of your environmental dependencies, impacts, risks, and opportunities?

Short-term

(2.1.1) From (years)

0

(2.1.3) To (years)

5

(2.1.4) How this time horizon is linked to strategic and/or financial planning

As part of our Enterprise Risk Management (ERM) approach, on a semi-annual basis risk scorecards capture the company leadership's view of enterprise risks and risk trends over a 5 year horizon. Time horizon for assessing short-term climate-related risks and opportunities is aligned with other business practice time horizons.

Medium-term

(2.1.1) From (years)

6

(2.1.3) To (years)

10

(2.1.4) How this time horizon is linked to strategic and/or financial planning

We have used forward-looking scenario analyses in considering climate-related risks and opportunities over a medium-term horizon. To help manage climate-related risks, we have committed to being 100% renewably powered by 2028 and have set a near-term science-based target to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028, relative to 2020. This target is in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. We leveraged the company's targets to define the time horizon of 2030-2050 for the scenario analysis.

Long-term

(2.1.1) From (years)

11

(2.1.2) Is your long-term time horizon open ended?

Select from:

☑ No

(2.1.3) To (years)

30

(2.1.4) How this time horizon is linked to strategic and/or financial planning

We have used forward-looking scenario analyses in considering climate-related risks and opportunities over a long-term horizon. We have set a long-term target to reduce absolute scope 1 and scope 2 GHG emissions by 95% and achieve net zero emissions by 2050, relative to 2020. This target is in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. We leveraged the company's targets to define the time horizon of 2030-2050 for the scenario analysis. For physical risks, we used IPCC's assessment of 1.5C global warming (consistent with RCP 2.6), as well as the U.S. National Climate Assessment evaluation of RCP 4.5 and RCP 8.5. For transition risks, we used evaluations by IEA and Princeton University of net zero pathways by 2050 globally and for the U.S., respectively. These transition pathways are consistent with RCP 2.6. These time horizons are relevant to our organization since First Solar has committed to RE100 and has set a target to purchase all electricity from renewables by 2028. First Solar has also committed to science-based climate targets for 2028 and 2050. The scenario analysis considered First Solar-owned facilities and assets - specifically manufacturing, recycling, and R&D facilities. However, some aspects, such as future policy or market changes were considered in terms of their impact on the company as a whole.
[Fixed row]

(2.2) Does your organization have a process for identifying, assessing, and managing environmental dependencies and/or impacts?

	Process in place	Dependencies and/or impacts evaluated in this process
	Select from: ☑ Yes	*Select from:* ☑ Both dependencies and impacts

[Fixed row]

(2.2.1) Does your organization have a process for identifying, assessing, and managing environmental risks and/or opportunities?

	Process in place	Risks and/or opportunities evaluated in this process	Is this process informed by the dependencies and/or impacts process?
	Select from: ☑ Yes	*Select from:* ☑ Both risks and opportunities	*Select from:* ☑ Yes

[Fixed row]

(2.2.2) Provide details of your organization's process for identifying, assessing, and managing environmental dependencies, impacts, risks, and/or opportunities.

Row 1

(2.2.2.1) Environmental issue

Select all that apply

☑ Climate change

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

☑ End of life management

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply

☑ Tier 4+ suppliers

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ More than once a year

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ Integrated into multi-disciplinary organization-wide risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ Local

☑ Sub-national

☑ National

(2.2.2.12) Tools and methods used

Enterprise Risk Management

☑ Enterprise Risk Management

Other

☑ Materiality assessment

☑ Scenario analysis

(2.2.2.13) Risk types and criteria considered

Acute physical

☑ Cyclones, hurricanes, typhoons

☑ Flood (coastal, fluvial, pluvial, ground water)

☑ Tornado

Chronic physical

☑ Increased severity of extreme weather events

Policy

☑ Carbon pricing mechanisms

☑ Changes to international law and bilateral agreements

☑ Changes to national legislation

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Local communities

☑ Suppliers

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

First Solar has a robust Enterprise Risk Management (ERM) system, identifying key risk areas across the organization, each with designated risk owners. These risk owners, in collaboration with the executive leadership team (ELT), including the CEO, review risk scorecards quarterly. The scorecards provide a forward-looking view of enterprise risks and trends over a 3-5 year horizon, covering both medium- and long-term risks where relevant. The ERM system evaluates enterprise-wide risks, including emerging, transient, and cross-functional risks, by assessing their trends and priorities, while accounting for mitigation efforts. The key risk domains include regulatory, operational, financial, reputational, market, technology, supply chain, organizational adaptability, and environmental, social, and governance (ESG)

risks. Integrated within these domains are climate-related risks, such as potential disruptions to manufacturing, facility outages, infrastructure breakdowns, and the evolving expectations around ESG disclosures. These risks also cover market changes, demand for low-carbon solar products, insurance coverage, and the carbon footprint of operations and supply chains. Risks are prioritized into three levels, with Priority 1 risks posing the most significant threats, such as production disruptions leading to loss of sales, market share, or reputational damage. A risk-balancing assessment is conducted to determine how various risks affect the company's operations and monetization strategies. This assessment helps guide decisions on whether to mitigate, transfer, accept, or control each risk. The results are reviewed by the executive leadership team and the Board's Audit Committee, with updates provided quarterly. Climate-related risks and opportunities are included when they have a significant impact on the business and operations. First Solar's ERM process is integrated with existing operational systems and risk management activities. A cross-functional ESG task force, made up of ESG focus leaders and internal experts, plays a key role in identifying strategic ESG risks and opportunities, including both transitional and physical climate-related risks. This taskforce also anticipates ESG trends that could affect the business and addresses gaps and challenges by proposing new policies, practices, targets, metrics, and disclosures. The ESG focus leaders spearhead initiatives across critical areas, such as energy efficiency, emissions reduction, circular economy practices, inclusion, diversity, innovative products, public policy, product reliability, responsible sourcing, and human rights. The ESG Steering Committee, consisting of the ELT meets quarterly to review progress and seize climate-related opportunities. These include increasing demand for First Solar's low-carbon solar modules through ecolabels and responsible procurement practices. The nominating and governance committee considers risks related to corporate governance practices and ESG strategy, policies, and initiatives. Facility risk scorecards are used to assess physical climate-related risks, including extreme weather events, with a focus on operational continuity. Risks at the asset level, e.g. natural disasters affecting individual facilities, are reviewed annually or more frequently if necessary. We also leverage third-party risk assessment tools, supplier questionnaires, and environmental and social indices to evaluate risk across our supply chain.

Row 2

(2.2.2.1) Environmental issue

Select all that apply

☑ Water

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

☑ End of life management

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply

☑ Tier 4+ suppliers

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ More than once a year

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ Integrated into multi-disciplinary organization-wide risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ Local

☑ Sub-national

☑ National

(2.2.2.12) Tools and methods used

Commercially/publicly available tools

☑ RBA Country Risk Assessment Tool

Enterprise Risk Management

☑ Enterprise Risk Management

Other

☑ Materiality assessment

☑ Scenario analysis

(2.2.2.13) Risk types and criteria considered

Acute physical

☑ Cyclones, hurricanes, typhoons

☑ Flood (coastal, fluvial, pluvial, ground water)

☑ Tornado

Chronic physical

☑ Increased levels of environmental pollutants in freshwater bodies

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Local communities

☑ Suppliers

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

First Solar has established a robust Enterprise Risk Management (ERM) system, identifying key risk areas across the organization, each with designated risk owners. These risk owners, in collaboration with the executive leadership team (ELT), including the CEO, review risk scorecards quarterly. The scorecards provide a forward-looking view of enterprise risks and trends over a 3-5 year horizon, covering both medium- and long-term risks where relevant. The ERM system evaluates enterprise-wide risks, including emerging, transient, and cross-functional risks, by assessing their trends and priorities, while accounting for mitigation efforts. The key risk domains include regulatory, operational, financial, reputational, market, technology, supply chain, organizational adaptability, and environmental, social, and governance (ESG) risks. Integrated within these domains are climate-related risks, such as potential disruptions to manufacturing, facility outages, infrastructure breakdowns, and the evolving expectations around ESG disclosures. These risks also cover market changes, demand for low-carbon solar products, insurance coverage, and the carbon footprint of operations and supply chains. Risks are prioritized into three levels, with Priority 1 risks posing the most significant threats, such as production disruptions leading to loss of sales, market share, or reputational damage. A risk-balancing assessment is conducted to determine how various risks affect the company's operations and monetization strategies. This assessment helps guide decisions on whether to mitigate, transfer, accept, or control each risk. The results are reviewed by the executive leadership team and the Board's Audit Committee, with updates provided quarterly. Climate-related risks and opportunities are included when they have a significant impact on the business and operations. First Solar's ERM process is deeply integrated with its existing operational systems and risk management activities. A cross-functional ESG task force, made up of ESG focus leaders and internal experts, plays a key role in identifying strategic ESG risks and opportunities, including both transitional and physical climate-related risks. This task force also anticipates ESG trends that could affect the business and addresses gaps and challenges by proposing new policies, practices, targets, metrics, and disclosures. The ESG focus leaders spearhead initiatives across critical areas, such as energy efficiency, emissions reduction, circular economy practices, inclusion, diversity, innovative products, public policy, product reliability, responsible sourcing, and human rights. The ESG Steering Committee, consisting of the ELT, meets quarterly to review progress on climate- and water-related opportunities, e.g. increasing demand for First Solar's low-carbon solar modules through ecolabels and increasing water efficiency. The nominating and governance committee considers risks related to corporate governance and ESG strategy, policies and initiatives. Facility risk scorecards are used to assess physical climate-related risks, including extreme weather events, with a focus on operational continuity. Risks at the asset level, e.g. natural disasters affecting individual facilities, are reviewed annually or more frequently if necessary. We also leverage third-party risk assessment tools, supplier questionnaires, and environmental and social indices to evaluate risk across our supply chain.

[Add row]

(2.2.7) Are the interconnections between environmental dependencies, impacts, risks and/or opportunities assessed?

(2.2.7.1) Interconnections between environmental dependencies, impacts, risks and/or opportunities assessed

Select from:

☑ Yes

(2.2.7.2) Description of how interconnections are assessed

At First Solar, we carefully evaluate the interconnections between our environmental dependencies, impacts, risks, and opportunities as part of our broader sustainability strategy. We rely on natural resources, particularly freshwater, for our solar module manufacturing, which requires ultra-pure water. Aware of this dependency, we actively monitor and manage our environmental footprint, including carbon emissions, water usage, and waste generation, and take deliberate actions to minimize our impact, such as reducing water withdrawal and managing wastewater discharge. Our enterprise risk management framework incorporates environmental risks and opportunities, identifying key risks like water scarcity and flooding that could disrupt our operations. At the same time, we see opportunities in enhancing resource efficiency, driving clean technology innovation, and positioning ourselves as a leader in the sustainable energy industry. We integrate climate- and nature-related disclosures into our overall business strategy, aligning emissions reduction, water conservation, and responsible resource use with our long-term goals. This ensures we consider the synergies and trade-offs between climate action and nature conservation, offering a holistic and transparent approach to environmental stewardship that supports both operational resilience and sustainability objectives.
[Fixed row]

(2.3) Have you identified priority locations across your value chain?

(2.3.1) Identification of priority locations

Select from:

☑ Yes, we have identified priority locations

(2.3.2) Value chain stages where priority locations have been identified

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(2.3.3) Types of priority locations identified

Locations with substantive dependencies, impacts, risks, and/or opportunities

☑ Locations with substantive dependencies, impacts, risks, and/or opportunities relating to water

☑ Other location with substantive nature-related dependencies, impacts, risks, and/or opportunities, please specify **:**Relating to climate

(2.3.4) Description of process to identify priority locations

We use the WWF Biodiversity Risk Filter to screen our manufacturing locations for potential impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats, particularly in the Asia-Pacific, where biodiversity has decreased by 55% over the past 50 years, according to WWF's 2022 Living Planet Report. While our PV manufacturing facilities in the U.S., Malaysia, and Vietnam operate in areas with low to very low baseline water stress, our facility near Chennai in Tamil Nadu, India, which began operating in 2023, faces high baseline water stress. To minimize impacts on local water resources, this facility operates as a net-zero PV manufacturing water withdrawal site, relying entirely on tertiary-treated reverse osmosis water from the city's sewage treatment plant for its process water, with zero wastewater discharge. We regularly map our supply base and conduct an annual risk assessment to identify potential high-risk suppliers. We leverage third-party tools and indices on global slavery, forced labor, and other environmental, social, and governance (ESG) factors to identify high-risk suppliers based on industry, geography, and spend. Water-related aspects evaluated as part of the environmental assessment include flood risk, water stress, wastewater management, and access to drinking water and sanitation. These factors contribute to the overall environmental score in the risk assessment. The threshold for a substantive impact on water security is a high-spend supplier with a "high" or "extremely high" score on the World Resources Institute's Water Stress Index. Potential downstream impacts may include solar project development, but many of our customers are committed to responsible construction and land-use practices. We have previously worked with WWF to identify best practices for each stage of utility-scale PV power projects—from development to decommissioning—demonstrating how solar can coexist harmoniously with nature.

(2.3.5) Will you be disclosing a list/spatial map of priority locations?

Select from:

☑ No, we have a list/geospatial map of priority locations, but we will not be disclosing it

[Fixed row]

(2.4) How does your organization define substantive effects on your organization?

Risks

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Asset value

(2.4.3) Change to indicator

Select from:

☑ Absolute decrease

(2.4.5) Absolute increase/ decrease figure

50000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Likelihood of effect occurring

☑ Other, please specify :major impact on business, strategy, reputation, operational milestones, talent loss, or financial loss

(2.4.7) Application of definition

Our definition for a substantive financial impact is a major impact on business, strategy, reputation, operational milestones, talent loss, or financial loss e.g. direct loss or opportunity cost of more than 50 million (medium-high impact) to more than 100 million (high impact). Physical climate risks (e.g. natural disasters at our manufacturing facilities or our suppliers' sites) that affect a plant's ability to produce and perform process development activities that could generate substantive change to our business. These risks would likely result in us losing some production for a while, until we are able to bring the affected buildings back to production. In this case, substantive risk is defined in terms of its impact on our overall production.

Opportunities

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Asset value

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

50000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Likelihood of effect occurring

☑ Other, please specify :Competitive differentiation and increased revenues due to increased demand for products, increased production capacity, or access to new markets.

(2.4.7) Application of definition

Substantive opportunities offer competitive differentiation and/or increased revenues due to increased demand for products, increased production capacity, or access to new markets.
[Add row]

(2.5) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?

(2.5.1) Identification and classification of potential water pollutants

Select from:

☑ Yes, we identify and classify our potential water pollutants

(2.5.2) How potential water pollutants are identified and classified

We identify and classify water pollutants based on permit limits. First Solar treats wastewater at our manufacturing and recycling facilities using a batch discharge system. Once treated, the water is collected in holding tanks, which are sampled and tested to confirm compliance with regulatory limits before being discharged. No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant. If the water contaminant levels are above the permitted discharge limit, the wastewater is sent for re-treatment internally. We test wastewater for Chemical Oxygen Demand and Total Suspended Solids at all our manufacturing facilities. We also test for Biological Oxygen Demand in Malaysia where treated wastewater is directly discharged to river. First Solar treats wastewater at our manufacturing and recycling facilities using a batch discharge system. Once treated, the water is collected in holding tanks, which are sampled and tested to confirm compliance with regulatory limits before being discharged.
[Fixed row]

(2.5.1) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.

Row 1

(2.5.1.1) Water pollutant category

Select from:

☑ Inorganic pollutants

(2.5.1.2) Description of water pollutant and potential impacts

We identify and classify water pollutants based on permit limits. We test wastewater for the presence of metals such as cadmium, copper, and iron. First Solar treats wastewater at our manufacturing and recycling facilities using a batch discharge system. Once treated, the water is collected in holding tanks, which are sampled and tested to confirm compliance with regulatory limits before being discharged.

(2.5.1.3) Value chain stage

Select all that apply

☑ Direct operations

(2.5.1.4) Actions and procedures to minimize adverse impacts

Select all that apply

☑ Beyond compliance with regulatory requirements

☑ Industrial and chemical accidents prevention, preparedness, and response

☑ Water recycling

☑ Upgrading of process equipment/methods

(2.5.1.5) Please explain

No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant. If the water contaminant levels are above the permitted discharge limit, the wastewater is sent for re-treatment internally.

Row 3

(2.5.1.1) Water pollutant category

Select from:

☑ Other nutrients and oxygen demanding pollutants

(2.5.1.2) Description of water pollutant and potential impacts

We identify and classify water pollutants based on permit limits. We test wastewater for Chemical Oxygen Demand and Total Suspended Solids at all our manufacturing facilities. We also test for Biological Oxygen Demand in Malaysia where treated wastewater is directly discharged to river. First Solar treats wastewater at our manufacturing and recycling facilities using a batch discharge system. Once treated, the water is collected in holding tanks, which are sampled and tested to confirm compliance with regulatory limits before being discharged.

(2.5.1.3) Value chain stage

Select all that apply

☑ Direct operations

(2.5.1.4) Actions and procedures to minimize adverse impacts

Select all that apply

☑ Beyond compliance with regulatory requirements

(2.5.1.5) Please explain

No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant. If the water contaminant levels are above the permitted discharge limit, the wastewater is sent for re-treatment internally.
[Add row]

C3. Disclosure of risks and opportunities

(3.1) Have you identified any environmental risks which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

Climate change

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Water

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Plastics

(3.1.1) Environmental risks identified

Select from:

☑ No

(3.1.2) Primary reason why your organization does not consider itself to have environmental risks in your direct operations and/or upstream/downstream value chain

Select from:

☑ Environmental risks exist, but none with the potential to have a substantive effect on our organization

(3.1.3) Please explain

We are not a major plastic user or producer. The only two resin-based products in our solar modules are the interlayer and junction box.
[Fixed row]

(3.1.1) Provide details of the environmental risks identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.1.1.1) Risk identifier

Select from:
☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical
☑ Increased severity of extreme weather events

(3.1.1.4) Value chain stage where the risk occurs

Select from:
☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply
☑ India
☑ Malaysia
☑ United States of America
☑ Viet Nam

(3.1.1.9) Organization-specific description of risk

Our solar modules are currently produced at our facilities in Ohio and Alabama (United States of America); Kulim (Malaysia); Ho Chi Minh City (Vietnam); and Tamil Nadu (India). Damage to or disruption of these facilities could interrupt our business (e.g., through an inability to maintain maximum production levels) and adversely affect our ability to generate net sales. Our manufacturing risk scorecards, which generally consider risks over a 5-year time horizon, have identified natural disasters (such as earthquakes, tornadoes, hurricanes, building collapses, floods, etc.) as a key risk driver that can impact our manufacturing plant's abilities to operate in Ohio. With regards to our operations in Malaysia and Vietnam, we do have occasional road flooding affecting associates' commute to work but it has never been significant enough to cause interruption to production due to headcount shortage. There has been no direct physical impact to buildings from heavy rain and we have not experienced earthquakes or hurricanes that have impacted the sites. A third-party risk assessment conducted at our manufacturing site in Malaysia concluded the risks of natural disasters such as earthquakes, floods, storm surges, tsunamis, windstorms or tornadoes were low or very low which is why the financial impact assessment focuses only on our Ohio operations. However, we expect storm intensity to increase by 2030 in a 2-degree Celsius or higher warming scenario.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Decreased revenues due to reduced production capacity

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ About as likely as not

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In case of these or other weather events or natural disasters, (i) our manufacturing and R&D equipment, on-site IT facilities, and inventory, among other things, may be damaged or destroyed, which may result in significant write-offs or significant expenses to repair or replace certain operations; (ii) the production and shipment of our solar modules may be disrupted as a result of (a) the damage or destruction of our facilities and infrastructure, (b) power outages, (c) delayed or cancelled deliveries of equipment and raw materials, and/or (d) the lack of clear and safe physical access to and from our manufacturing facilities, among other things; and (iii) we may be unable to execute our technology roadmap in a timely manner. We also consider the risks associated with weather events and natural disasters as part of our site selection, design, and construction process. Further, as a result of our own potential operational delays mentioned above, our ability to fulfill customer orders may be impaired or delayed, and we could incur significant losses.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

670000000

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

4700000000

(3.1.1.21) Anticipated financial effect figure in the medium-term – minimum (currency)

0

(3.1.1.22) Anticipated financial effect figure in the medium-term – maximum (currency)

5400000000

(3.1.1.23) Anticipated financial effect figure in the long-term – minimum (currency)

0

(3.1.1.24) Anticipated financial effect figure in the long-term – maximum (currency)

5400000000

(3.1.1.25) Explanation of financial effect figure

Based on a third-party loss expectancy study conducted on our first manufacturing facility, the minimum probable financial impact ranges from approximately 670 million USD (one facility) in the event of a total loss which could be caused by a natural disaster such as a tornado. Assuming 7 global manufacturing facilities, the estimated maximum financial impact would amount to approximately 4.7 billion USD. This figure takes the loss of the property, equipment, inventory, and business interruption impacts into account. There have been no insurable losses at our facilities in the last 5 years. For the medium- and short-term, we consider the addition of two facilities which would amount to a maximum financial impact of approximately 5.4 billion. The likelihood is about as likely as not. In a 1.5-degree Celsius warming scenario, we expect to see impacts of weather changes similar in intensity to what we face now over the coming decades; with increased storms, heat, drought, wildfires, and the like. However, under a 2-degree Celsius warming scenario, we anticipate greater storm intensity and more frequent extreme heat near 2030, with this risk roughly doubling by 2060. Under a 3-degree or higher Celsius warming scenario, we expect physical climate risks to be of significant impact. We anticipate storms that are worse near 2030 than those we expect under a 2-degree scenario in 2060, with this risk roughly doubling by 2060.

(3.1.1.26) Primary response to risk

Policies and plans

☑ Increase insurance coverage

(3.1.1.27) Cost of response to risk

6600000

(3.1.1.28) Explanation of cost calculation

The cost of the response in 2023 is based on our global annual insurance costs in the United States, Malaysia, Vietnam and India (approximately 6.6 million). The increase in our insurance costs compared to 2022 is primarily due to the addition of our third manufacturing facility in Ohio and our new manufacturing facility in India. We inaugurated our manufacturing facility in Alabama in 2024.

(3.1.1.29) Description of response

To manage the impacts of a natural disaster on our operations, we separate our manufacturing capabilities across several buildings and purchase insurance to cover losses arising from such natural disasters, among other proactive and reactive strategies. We have implemented our management method (i.e. separating manufacturing capabilities across several buildings) to manage this risk.

Water

(3.1.1.1) Risk identifier

Select from:

☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Acute physical

☑ Flooding (coastal, fluvial, pluvial, groundwater)

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ India

☑ Malaysia

☑ United States of America

☑ Viet Nam

(3.1.1.7) River basin where the risk occurs

Select all that apply

☑ Saigon

☑ St. Lawrence

☑ Other, please specify **:**Muda River, Chembarabakkam Lake

(3.1.1.9) Organization-specific description of risk

Our manufacturing risk scorecards for the United States, Vietnam, India and Malaysia identified natural disasters, such as flood, that affects our manufacturing facility's ability to produce as a potential medium-high risk. Our manufacturing facility in Vietnam has a high exposure risk to flooding, as identified by the WWF Water Risk Filter Tool and the World Resources Institute's Flood Risk Index. Our facility risk scorecard has flagged flooding at our warehouse's loading bays as a potential risk. However, the likelihood of flooding is considered low due to our current drainage system, which effectively channels stormwater away from built-up areas. In 2023, our manufacturing operations in Vietnam represented approximately 21% of our nameplate capacity. That year, we produced 12.1 GW of solar modules, marking a 33% increase compared to 2022. The nameplate capacity of our Vietnam facility stood at 2.4 GW. While there is no history of flooding at this site, the potential impact of such an event is considered "medium" based on ongoing assessments

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Disruption in production capacity

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Unlikely

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

A water outage at our utility supplier would disrupt the supply of water to our manufacturing plants in the United States of America, Vietnam, and Malaysia, as identified by our manufacturing facility risk scorecard. Any damage to or disruption of our facilities would result in an inability to maintain maximum production levels. Our manufacturing operations in the United States of America, Malaysia, and Vietnam represented approximately 95% of our 2023 manufacturing production.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

330000000

(3.1.1.25) Explanation of financial effect figure

Assuming a contracted module backlog of a total contracted backlog of 78.3 GW with an aggregate value of USD 23.3 billion, or approximately USD 0.298 per watt as of the end of 2023, and a combined nameplate capacity in the United States of America, Vietnam, India and Malaysia of 16.6 GW, the maximum potential revenue impact if our production in the United States of America, Malaysia, India and Vietnam facilities were down for an entire month would be approximately 330 million; such a worst-case scenario is unlikely. We would likely lose some production for a while in the event of water-related impacts, such as flooding, until we can bring the affected buildings back into production.

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Increase geographic diversity of facilities

(3.1.1.27) Cost of response to risk

6000000

(3.1.1.28) Explanation of cost calculation

The cost of the response is based on our approximate global annual insurance costs in the United States of America, Malaysia, and Vietnam (USD 6 million). These cover us in case there is a natural catastrophe. The increase in our insurance costs compared to 2022 is primarily due to the addition of our third manufacturing facility in Ohio.

(3.1.1.29) Description of response

To manage the impacts of a natural disaster on our operations, we separate our manufacturing capability across several buildings and purchase insurance to cover such losses. In Vietnam, we have a drainage system that safely carries stormwater away from built-up areas. We have implemented these proactive and reactive management methods to minimize this risk.

Water

(3.1.1.1) Risk identifier

Select from:

☑ Risk2

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Rationing of municipal water supply

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Upstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Malaysia

☑ Viet Nam

(3.1.1.7) River basin where the risk occurs

Select all that apply

☑ Saigon

☑ Other, please specify **:**Muda River

(3.1.1.9) Organization-specific description of risk

A water outage at our utility supplier would disrupt the supply of water to our manufacturing plants in Vietnam and Malaysia, as identified by our manufacturing facility risk scorecard. Disruption to our utility water supply would result in an inability to maintain maximum production levels.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Disruption in production capacity

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Unlikely

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Malaysia and Vietnam represented approximately 59% of our production in 2023. In 2023, we produced 12.1 GW of solar modules, representing a 33% increase compared to 2022. Assuming a contracted module backlog of 78.3 GW with an aggregate value of USD 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and 7.1GW of production in Vietnam and Malaysia, the maximum potential revenue impact of a one-month water outage would be approximately USD 176 million. Disruption to our utility water supply would result in an inability to maintain maximum production levels. While we would likely experience some supply disruption in the event of a water outage, it is unlikely to last for more than a month.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

71000000

(3.1.1.25) Explanation of financial effect figure

Assuming a contracted module backlog of a total contracted backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a combined nameplate capacity in Ohio, Vietnam and Malaysia of 13.4 GW, the maximum potential revenue impact if our production in Ohio, Malaysia and Vietnam facilities were down for an entire month would be approximately 330 million; such a worst-case scenario is unlikely. We would likely lose some production for a while in the event of water-related impacts, such as flooding, until we can bring the affected buildings back into production.

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Secure alternative water supply

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

The cost of the response is part of our normal plant operational expenditures and would be a one-off expense.

(3.1.1.29) Description of response

Our facility in Vietnam has a water storage tank that can supply 8 hours of production. We also identified a secondary source which can supply water in the event of a water outage to help eliminate the risk of disruption to our production. Our facility in Malaysia has a water storage tank that holds 1 day of water supply. We also have

a second storage source which can supply water for another 2 days in the event of a water outage. We have had no historical issues with water supply and the water utility's repair cycle times are typically short so our 3 day storage is enough to cover for it and help eliminate the risk.

Water

(3.1.1.1) Risk identifier

Select from:

☑ Risk3

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Water stress

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ India

(3.1.1.7) River basin where the risk occurs

Select all that apply

☑ Other, please specify **:**Chembarabakkam Lake

(3.1.1.9) Organization-specific description of risk

Although our manufacturing facilities in the United States of America, 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, as identified by the WWF Water Risk Filter.

For our manufacturing facility in India, climate change presents several potential risks that are pertinent to our operations and stakeholders. Rising temperatures increase the frequency of heatwaves, which adversely affect public health and reduce agricultural productivity. Erratic rainfall patterns and groundwater depletion exacerbate water scarcity, which creates competition among sectors. Extreme weather events, including more frequent and intense cyclones, floods, and droughts, pose significant threats to infrastructure and displace communities. Sea-level rise leads to coastal erosion and increased salinity of freshwater resources.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Disruption in production capacity

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

*Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a nameplate capacity of 3.2GW in India, the maximum potential revenue impact of approximately 950 million. Total cost price per watt (29 cents) * total watts (3.2 GW)*

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

950000000

(3.1.1.25) Explanation of financial effect figure

Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a nameplate capacity of 3.2GW in India, the maximum potential revenue impact is approximately 95 million.

(3.1.1.26) Primary response to risk

Compliance, monitoring and targets

☑ Implementation of environmental best practices in direct operations

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

The cost of the response is part of our normal plant operational expenditures and would be a one-off expense.

(3.1.1.29) Description of response

Although our manufacturing facilities in the United States of America, Malaysia, and Vietnam operate in areas with low to very low baseline water stress, our facility near Chennai in Tamil Nadu, India, which began operating in 2023, faces high baseline water stress. To minimize impacts on local water resources, this facility operates as a net-zero manufacturing water withdrawal site, relying entirely on tertiary-treated reverse osmosis water from the city's sewage treatment plant for its process water, with zero wastewater discharge. Instead of being discharged, the wastewater is treated onsite and converted into freshwater, allowing it to be reused in our operations. In addition to maximizing the use of alternative water sources (i.e., water that is not derived from fresh surface or groundwater), we continuously improve water conservation through internal monitoring, benchmarking, and optimizing our process tool designs.In addition to maximizing the use of alternative water sources—i.e., water that is not derived from fresh surface or groundwater—we continuously improve water conservation through internal monitoring, benchmarking, and optimizing our process tool designs.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Increased severity of extreme weather events

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Upstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ India

☑ Malaysia

☑ United States of America

☑ Viet Nam

(3.1.1.9) Organization-specific description of risk

Climate-related physical risks, including weather events and natural disasters, could have a material adverse effect on our business, financial condition, or results of operations. Our suppliers may be adversely affected by weather events and natural disasters, which could disrupt their ability to deliver certain manufacturing equipment, materials, and/or services for extended periods of time. Our suppliers may also incur additional costs to repair or replace their own operations, which may cause them to require higher prices as part of current and future contracts and/or otherwise be unable to perform under their existing contract commitments. First Solar is exposed to price risks for the raw materials, components, services, and energy costs used in the manufacturing and transportation of our solar modules. Our failure to obtain raw materials and components that meet our quality, quantity, and cost requirements in a timely manner could interrupt or impair our ability to manufacture our solar modules or increase our manufacturing costs. For example, the imposition of carbon taxes could lead to increases in the costs of raw

materials, such as glass, which have relatively high energy requirements for production. In addition, the failure of a key supplier to perform under its contract(s) with us could disrupt our supply chain, which could result in higher prices and/or a disruption in our manufacturing process.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased direct costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ About as likely as not

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Our suppliers may be adversely affected by weather events and natural disasters, which could disrupt their ability to deliver certain manufacturing equipment, materials, and/or services for extended periods of time. Our suppliers may also incur additional costs to repair or replace their own operations, which may cause them to require higher prices as part of current and future contracts and/or otherwise be unable to perform under their existing contract commitments. The imposition of carbon taxes could lead to increases in the costs of raw materials, such as glass, which have relatively high energy requirements for production. In addition, the failure of a key supplier to perform under its contract(s) with us could disrupt our supply chain, which could result in higher prices and/or a disruption in our manufacturing process. We may be unable to pass along changes in the costs of the raw materials and components for our modules, or the costs associated with logistics services for the distribution of our modules, to our customers and may be in default of our delivery obligations if we experience a manufacturing disruption.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

131000000

(3.1.1.21) Anticipated financial effect figure in the medium-term – minimum (currency)

0

(3.1.1.22) Anticipated financial effect figure in the medium-term – maximum (currency)

157000000

(3.1.1.23) Anticipated financial effect figure in the long-term – minimum (currency)

0

(3.1.1.24) Anticipated financial effect figure in the long-term – maximum (currency)

200000000

(3.1.1.25) Explanation of financial effect figure

To estimate the range for the financial implications of a carbon tax over a long-term time horizon, we used the Interagency Working Group on Social Cost of Carbon's estimates for a ton of CO2 emitted in 2025 at 56 per metric ton of CO2 emissions (at a 3 percent discount rate), increasing to 67 and 85 per metric ton in 2035 and 2050 respectively. Assuming a carbon price of 56 and 85 metric ton applied to our 2023 scope 3 emissions for purchased goods and services (2,347,905 metric tons CO2-eq), the cost of our purchased goods and services could increase by approximately 131 million to a maximum of approximately 157 million and 200 million in 2035 and 2050, respectively.

(3.1.1.26) Primary response to risk

Engagement

☑ Engage with suppliers

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

The cost of response to this risk is 0 since supplier qualification and engagement is included in our normal operating costs.

(3.1.1.29) Description of response

To manage risks associated with a carbon tax, we have begun engaging with key suppliers to assess their ability to increase the recycled content of the materials we use in our products and reduce their carbon intensity. To manage supply chain price risks, we strive to qualify multiple suppliers using a robust qualification process and diversify the geographic make-up of our suppliers. When possible, we attempt to use suppliers that can provide a raw material supply source that is near our manufacturing locations, which is designed to reduce (i) the cost and lead times for such materials and (ii) transport- and shipping-related energy use and carbon emissions.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Increased severity of extreme weather events

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Downstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

Climate-related physical risks, including weather events and natural disasters, may affect our customers, which could have a material adverse effect on our business, financial condition, or results of operations. Our customers may be adversely affected by weather events and natural disasters, which could result in significant site damages, including damages to our solar modules installed at those sites. Damages may adversely impact our customers financially, and related business disruptions may delay or accelerate certain project timelines, which could result in an inability to perform under their contracts or otherwise deliver timely payment to us, if at all. The loss of any of our large customers, or the inability of our customers and counterparties to perform under their contracts with us, could significantly reduce our net sales and negatively impact our results of operations.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Other, please specify **:**Reduced and/or deferred revenues and/or cash flows due to adverse customer circumstances.

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ About as likely as not

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

The loss of any of our large customers, or the inability of our customers and counterparties to perform under their contracts with us, could significantly reduce our net sales and negatively impact our results of operations.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

300000000

(3.1.1.25) Explanation of financial effect figure

During 2023, we only had one customer that accounted for more than 10% of our modules business net sales. Our modules business net sales amounted to approximately 3 billion. The maximum financial impact is estimated at 300 million, or 10% of 3 billion.

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Increase investment in R&D

(3.1.1.27) Cost of response to risk

152000000

(3.1.1.28) Explanation of cost calculation

The cost of response is included in our research and development expenses which amounted to 152 million in 2023, up from approximately 113 million in 2022.

(3.1.1.29) Description of response

We have research and development (R&D) programs to improve module durability, and our products go through extended reliability testing to evaluate long-term durability in extremes of temperature, wind, irradiation, humidity and precipitation. First Solar modules are the only module in the industry immune against cell cracking and micro-cracking, which can be caused by excessive thermal and mechanical stress. We may also mitigate this risk by requiring some form of payment security from our customers, such as cash deposits, parent guarantees, bank guarantees, surety bonds, or commercial letters of credit. However, in the event the providers of such payment security fail to perform their obligations, our operating results could be adversely impacted.
[Add row]

(3.1.2) Provide the amount and proportion of your financial metrics from the reporting year that are vulnerable to the substantive effects of environmental risks.

Climate change

(3.1.2.1) Financial metric

Select from:
☑ Revenue

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

200000000

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:
☑ 1-10%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

4400000000

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ 100%

(3.1.2.7) Explanation of financial figures

The financial figure is taken from the column titled "Anticipated Financial Effect Figure in the Short Term – Maximum" for question 3.1.1. Assuming a carbon price of 56 and 85 metric ton applied to our 2023 scope 3 emissions for purchased goods and services (2,347,905 metric tons CO2-eq), the transition risk associated with a price on carbon could increased the cost of our purchased goods and services could increase by approximately 131 million to a maximum of approximately 157 million and 200 million in 2035 and 2050, respectively; this represents approximately 6% of our net sales in 2023. 100% of our manufacturing facilities are vulnerable to climate-related physical risks, including weather events and natural disasters, which may affect our manufacturing operations and therefore could have a material adverse effect on our business, financial condition, or results of operations.

Water

(3.1.2.1) Financial metric

Select from:

☑ Revenue

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

6500000000

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:

☑ 81-90%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

1351000000

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ 100%

(3.1.2.7) Explanation of financial figures

The financial figure is taken from the column titled "Anticipated Financial Effect Figure in the Short Term – Maximum" for question 3.1.1. We are in the process of expanding our manufacturing nameplate capacity to reach over 25 GW worldwide by the end of 2026. Water transition risks can impact up to 87% of our revenue since 21.7GW of the 25GW of our operations rely on sufficient amounts of good quality freshwater (direct use) as our thin film solar photovoltaic manufacturing process relies on ultra-pure water production. Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and an anticipated nameplate capacity of 21.7 GW (excluding India) by the end of 2026, we estimate the maximum vulnerable financial metric at our 3.2 GW facility in India is a net-zero 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. As we expand our manufacturing footprint, dependency on freshwater availability will increase. The indirect use of water is important as our supply chain relies on sufficient amounts of water to be available for use. However, by switching to less water-intensive electricity generation, this dependence could be reduced. First Solar conducted a lifecycle water assessment of our cadmium telluride (CdTe) PV modules, which concluded that the life cycle water withdrawal ranges from approximately 382– 425 L/MWh. (Source: Sinha, Meader and de Wild-Scholten, Life Cycle Water Usage in CdTe Photovoltaics, IEEE, Journal of Photovoltaics, 2012). Direct onsite water use represents only 12% of CdTe PV's lifecycle water withdrawal whereas the remainder represents indirect water withdrawal from the use of grid electricity and raw materials throughout the product life cycle. 100% of our manufacturing facilities are vulnerable to physical risks, whether related to natural disasters (e.g. flooding), water outages, or water stress (India).
[Add row]

(3.2) Within each river basin, how many facilities are exposed to substantive effects of water-related risks, and what percentage of your total number of facilities does this represent?

Row 1

(3.2.1) Country/Area & River basin

United States of America

☑ St. Lawrence

(3.2.2) Value chain stages where facilities at risk have been identified in this river basin

Select all that apply

☑ Direct operations

(3.2.3) Number of facilities within direct operations exposed to water-related risk in this river basin

1

(3.2.4) % of your organization's total facilities within direct operations exposed to water-related risk in this river basin

Select from:

☑ 1-25%

(3.2.10) % organization's total global revenue that could be affected

Select from:

☑ 31-40%

(3.2.11) Please explain

Our facilities in Ohio represented approximately 36% of our 2023 manufacturing production. Although we have three manufacturing facilities in Ohio, they have been aggregated and are referred to as one facility in this response since they share the same river basin.

Row 2

(3.2.1) Country/Area & River basin

Malaysia

☑ Other, please specify **:**Muda River

(3.2.2) Value chain stages where facilities at risk have been identified in this river basin

Select all that apply

☑ Direct operations

(3.2.3) Number of facilities within direct operations exposed to water-related risk in this river basin

1

(3.2.4) % of your organization's total facilities within direct operations exposed to water-related risk in this river basin

Select from:
☑ 1-25%

(3.2.10) % organization's total global revenue that could be affected

Select from:
☑ 21-30%

(3.2.11) Please explain

Our manufacturing operations in Malaysia represented approximately 29% of our 2023 manufacturing production.

Row 3

(3.2.1) Country/Area & River basin

Viet Nam
☑ Saigon

(3.2.2) Value chain stages where facilities at risk have been identified in this river basin

Select all that apply
☑ Direct operations

(3.2.3) Number of facilities within direct operations exposed to water-related risk in this river basin

1

(3.2.4) % of your organization’s total facilities within direct operations exposed to water-related risk in this river basin

Select from:

☑ 1-25%

(3.2.10) % organization’s total global revenue that could be affected

Select from:

☑ 21-30%

(3.2.11) Please explain

Our manufacturing operations in Vietnam represented approximately 30% of our 2023 manufacturing capacity.

Row 4

(3.2.1) Country/Area & River basin

India

☑ Other, please specify **:**Chembarabakkam Lake

(3.2.2) Value chain stages where facilities at risk have been identified in this river basin

Select all that apply

☑ Direct operations

(3.2.3) Number of facilities within direct operations exposed to water-related risk in this river basin

1

(3.2.4) % of your organization’s total facilities within direct operations exposed to water-related risk in this river basin

Select from:
☑ 1-25%

(3.2.10) % organization's total global revenue that could be affected

Select from:
☑ 1-10%

(3.2.11) Please explain

Although our manufacturing facilities in the U.S., 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 (and representative 5% of our 2023 manufacturing production), faces high baseline water stress. To minimize impacts on local water resources, we operate a net-zero 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. Instead of being discharged, the wastewater is treated onsite and converted into freshwater so it can be reused in our operations. In addition to maximizing alternative water usage, i.e. water that is not derived from fresh surface water or ground water sources, we are also driving continuous improvement in water conservation through internal monitoring, benchmarking, and optimization of our process tool designs.
[Add row]

(3.3) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

	Water-related regulatory violations	Comment
	Select from: ☑ No	*There were no fines, enforcement orders, and/or any other penalties for water-related regulatory violations in 2023.*

[Fixed row]

(3.5) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Select from:

☑ No, and we do not anticipate being regulated in the next three years

(3.6) Have you identified any environmental opportunities which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

	Environmental opportunities identified
Climate change	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized
Water	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized

[Fixed row]

(3.6.1) Provide details of the environmental opportunities identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Shift in consumer preferences

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

We remain focused on key geographic markets with abundant solar resources and high electricity demand, while also expanding customer relationships to diversify our base. The commercial and industrial market shows strong potential for adopting PV solar technology, as companies continue to make sustainability commitments. The demand for corporate renewables continues to accelerate, with corporations worldwide committing to the RE100 campaign. We believe we have a competitive advantage due to many customers' sensitivity to sustainability, experience, and financial stability of their suppliers and geographically diverse operating locations. Customers that placed orders for First Solar modules in 2023 included Lightsource bp, EDP Renewables, Capital Power, Energix Renewables, the Tennessee Valley Authority (TVA), Matrix Renewables, Longroad Energy, and Swift Current Energy. As in previous years, several customers placed orders spanning multiple years, seeking certainty in pricing and supply for their project development pipelines. The rise in multi-year module sale agreements reflects customers' need for confidence in the technology they invest in and the ethical integrity of their suppliers.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Very likely (90–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In 2023, 99% of our net sales was generated by our modules business through the sale of our PV modules. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the PV modules to the customers.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

4400000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

23300000000

(3.6.1.23) Explanation of financial effect figures

Net sales for our modules business increased by 36% to 3.3 billion in 2023 compared to 2.4 billion in 2022. As of July 30, 2024, our 2024 net sales guidance ranges from 4.4 billion to 4.6 billion. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the PV modules to the customers.

(3.6.1.24) Cost to realize opportunity

1900000000

(3.6.1.25) Explanation of cost calculation

We are in the process of expanding our manufacturing nameplate capacity, which is expected to reach approximately 14 GW in the US and 25 GW globally by the end of 2026. In 2024, we expect to invest between 1.8 billion and 2 billion in capital expenditures, which includes the new R&D facility in Ohio, as well as upgrades to machinery and equipment at our manufacturing facilities. These investments are aimed at further increasing our module wattage and expanding capacity and throughput at our manufacturing facilities.

(3.6.1.26) Strategy to realize opportunity

These investments are aimed at further increasing our module wattage and expanding capacity and throughput at our manufacturing facilities. The capital expenditures necessary to expand our capacity may be financed, in part, by advance payments from customers for module sales in future periods, the advanced manufacturing production credit described above, and/or near-term bridge financing instruments. We have a proven history of innovation, continuous improvement, and manufacturing success, driven by our significant investments in various R&D initiatives. During the three months ended June 30, 2024, we completed certain key construction and equipment installation activities at our dedicated R&D innovation center in Ohio, and in July 2024, the facility was formally commissioned. This R&D facility features a high-tech pilot manufacturing line, which is expected to enable the production of full-sized prototypes of thin film and tandem PV modules, supporting the implementation of our technology roadmap.

Water

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Resource efficiency

☑ Water recovery from sewage treatment

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ India
☑ Malaysia
☑ United States of America
☑ Viet Nam

(3.6.1.6) River basin where the opportunity occurs

Select all that apply
☑ Saigon
☑ St. Lawrence
☑ Other, please specify **:**Muda River, Chembarabakkam Lake

(3.6.1.8) Organization specific description

First Solar is reducing water consumption during manufacturing and recycling through the implementation of water conservation and recycling projects. In 2023, in line with our commitment to reduce our water footprint, especially in water-scarce areas, we recycled 318 million liters of water in 2023, which is an 88% increase over 2022. First Solar recycling plants are designed to generate net zero wastewater discharge. Instead, the wastewater is recycled and converted into freshwater, which can then be reused in the recycling process. We are also designing our new manufacturing facilities with sustainability in mind. Our new facility in India is in a region of high baseline water stress. To minimize its impact on local water resources, the facility has been designed to be a Net Zero Water Withdrawal PV manufacturing facility, believed to be the world's first, and will rely entirely on tertiary treated reverse osmosis water from the city's sewage treatment plant and have zero wastewater discharge. Additionally, the factory will feature what is believed to be India's first high-value PV module recycling facility, the fifth of its kind to join our global recycling network.

(3.6.1.9) Primary financial effect of the opportunity

Select from:
☑ Reduced direct costs

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply
☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Virtually certain (99–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

By recycling and reusing 318 megaliters of water in 2023, we saved approximately 800,000, up from approximately 400,000 in savings in 2022. As the price of water increases, we expect the financial benefits of water recycling and reduction efforts to increase. The more substantial financial impact is expected to come from our first manufacturing facility in India (3.2 GW nameplate manufacturing capacity), which commenced operations in the second half of 2023. We generally price and sell our solar modules on a per watt basis. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the PV modules to the customers. Assuming a contracted module backlog of a total contracted backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a nameplate capacity in India of 3.2 GW (as of the end of 2023), the potential annual financial opportunity would amount to approximately 950 million. Our India facility accounted for approximately 5% of our production in 2023. Assuming 5% of the 12.1 GW produced in 2023, we estimate a minimum financial impact of approximately 180 million.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

180000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

950000000

(3.6.1.23) Explanation of financial effect figures

We generally price and sell our solar modules on a per watt basis. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and nameplate capacity in India of 3.2 GW, the potential annual financial opportunity would amount to up to 950 million.

(3.6.1.24) Cost to realize opportunity

700000000

(3.6.1.25) Explanation of cost calculation

Our facility in India represents an investment of approximately 700 million.

(3.6.1.26) Strategy to realize opportunity

To minimize impacts on local water resources, 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. Instead of being discharged, the wastewater is treated onsite and converted into freshwater so it can be reused in our operations. In addition to maximizing alternative water usage, i.e. water that is not derived from fresh surface water or ground water sources, we are also driving continuous improvement in water conservation through internal monitoring, benchmarking, and optimization of our process tool designs. First Solar is reducing water consumption during manufacturing and recycling through the implementation of water conservation and recycling projects. In 2023, in line with our commitment to reduce our water footprint, especially in water-scarce areas, we recycled 318 million liters of water in 2023, an 88% increase over 2022. First Solar recycling plants are designed to generate zero wastewater discharge. Instead, the wastewater is recycled and converted into freshwater, which can then be reused in the recycling process.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ India

☑ France

☑ Germany

☑ Malaysia

☑ Viet Nam

☑ United States of America

(3.6.1.8) Organization specific description

From a commercial perspective, 2023 extended the momentum established in 2022 as long-term, multi-year procurement continued to drive demand. We added ten new customers and secured 28.3 gigawatts (GW) of net bookings at a base average selling price (ASP) of over 30 cents per watt. Customers that placed orders for First Solar modules in 2023 included Lightsource bp, EDP Renewables, Capital Power, Energix Renewables, the Tennessee Valley Authority (TVA), Matrix Renewables, Longroad Energy, and Swift Current Energy. As with previous years, many customers placed orders spanning multiple years as they sought certainty in pricing and supply for their project development pipelines. We began 2024 with a total contracted backlog of 78.3 GW, with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt. In comparison, we began 2023 with a contracted backlog totaling 61.4 GW, with an aggregate value of 17.7 billion, or approximately 28.8 cents per watt.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Very likely (90–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

The demand for corporate renewables continues to accelerate, with corporations worldwide committing to the RE100 campaign. We believe we also have a competitive advantage in the commercial and industrial market due to many customers' sensitivity to sustainability, experience, and financial stability of their suppliers and geographically diverse operating locations. Our thin film module technology has the smallest carbon footprint of any competing PV solar technology, measured on a lifecycle basis. We are committed to driving down the carbon footprint of our products and advocate for strong PV carbon footprint methodologies (such as those described in the EPEAT ecolabel's ultra-low carbon solar criteria), which minimize the potential for greenwashing. Furthermore, we registered our Series 6, Series 6 Plus, and Series 7 modules in the EPEAT registry. EPEAT is the only US EPA-approved ecolabel for the federal procurement of PV modules and power purchase agreements.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

195000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

207000000

(3.6.1.23) Explanation of financial effect figures

During our Q2 2024 earnings call, we announced a recently signed 620-megawatt module supply agreement subject to additional conditions precedent with a new U.S. customer that will be supplying power to a hyperscaler. As of our Q2 2024 earnings call and since our Q1 2024 earnings call, we secured a net 0.9 gigawatts of

bookings with an ASP of 0.316 per watt, excluding adjusters where applicable or 0.334 per watt, assuming the realization of adjusters where applicable and in each case, excluding India domestic sales. Therefore, we estimate the minimum and maximum potential financial impact of the 620 MW supply agreement to amount to 195 million and 207 million respectively.

(3.6.1.24) Cost to realize opportunity

11000000

(3.6.1.25) Explanation of cost calculation

The costs associated with realizing this opportunity fall under our government affairs and business development activities, which are categorized as part of our global selling, general, and administrative (SG&A) expenses. We used our 2023 SG&A costs (approximately 198 million) and 2023 sales (11.4 GW) to estimate the cost to realize a 620 MW supply agreement (11 million).

(3.6.1.26) Strategy to realize opportunity

To maximize the opportunity, we focus on differentiating ourselves through our sustainability advantages, which have been further enhanced with our Series 7 technology. Our thin-film module technology offers the smallest carbon footprint, fastest energy payback time, and lowest water use compared to other PV solar technologies on a lifecycle basis. These sustainability advantages position us competitively in tenders that prioritize low-carbon manufacturing processes. By continuing to emphasize our environmental leadership and leveraging government support and incentive structures in France, we can further strengthen our market position and increase sales in this growing market.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp3

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Development of new products or services through R&D and innovation

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

Solar energy is one of the fastest-growing forms of renewable energy, offering numerous economic and environmental benefits that make it an attractive complement or substitute for traditional energy generation. In recent years, the cost of producing electricity from PV solar power systems has decreased to levels that are competitive with, or even lower than, the wholesale price of electricity in many markets. This price decline has opened up new opportunities to develop systems in locations with limited or no financial incentives, thereby promoting the widespread adoption of solar energy. In addressing global electricity demand, our modules deliver energy at a lower levelized cost of electricity (LCOE)—the net present value of a system's total life cycle costs divided by the expected energy production over its lifetime—compared to traditional energy generation. With over 1 billion in cumulative R&D investments in the past decade, we have a proven track record of innovation and continuous improvement. We believe our strategies and unique points of differentiation provide a strong foundation for our competitive position, allowing us to remain a preferred provider of PV solar modules.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Virtually certain (99–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules that convert sunlight into electricity. Net sales for 2023 increased by 27% to 3.3 billion compared to 2.6 billion in 2022. The increase in net sales was primarily attributable to an increase in the volume of modules sold to third parties and an increase in the average selling price per watt sold.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

2600000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

3300000000

(3.6.1.23) Explanation of financial effect figures

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules that convert sunlight into electricity. Net sales for 2023 increased by 27% to 3.3 billion compared to 2.6 billion in 2022. The increase in net sales was primarily attributable to an increase in the volume of modules sold to third parties and an increase in the average selling price per watt sold.

(3.6.1.24) Cost to realize opportunity

2000000000

(3.6.1.25) Explanation of cost calculation

In 2023, our cost of sales amounted to approximately 2 billion.

(3.6.1.26) Strategy to realize opportunity

We have a proven history of innovation, continuous improvement, and manufacturing success, driven by our significant investments in various R&D initiatives. We continue to focus on our strategies and points of differentiation, which include our advanced module technology, our manufacturing process and distributed manufacturing presence, our R&D capabilities, the sustainability advantage of our modules, and our financial stability.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp3

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Markets

☑ Expansion into new markets

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ India

(3.6.1.8) Organization specific description

India continues to represent one of the largest and fastest growing markets for PV solar energy with aggressive renewable energy targets, which include increasing the country's overall renewable energy capacity to 500 GW by 2030, becoming energy independent by 2047, and establishing a net-zero carbon emissions target by 2070. Based on these targets, it is projected that the installed solar energy generation capacity will be 350 GW by 2030. In March 2023, the government of India allocated financial incentives under the Production Linked Incentive (PLI) scheme to certain PV module manufacturers, including First Solar. The Indian government has also implemented a regulation mandating that any solar project with federal utility, state utility, or commercial and industrial off-takers that interconnects through

government owned transmission lines only use solar modules from manufacturers included in the ALMM, and a requirement that all federal procurement of solar modules be only from cells and modules produced domestically. These targets, policies, and regulations are expected to drive significant and sustained demand for PV solar energy. Moreover, our CdTe solar technology is particularly well-suited to the Indian market, given its hot and humid climate conditions.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues through access to new and emerging markets

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Very likely (90–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

We generally price and sell our solar modules on a per watt basis. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GWDC of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a nameplate capacity of 3.2GW in India, the maximum potential revenue opportunity would amount to approximately 950 million.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

0

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

950000000

(3.6.1.23) Explanation of financial effect figures

We generally price and sell our solar modules on a per watt basis. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GWDC of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the modules to the customers. Assuming a contracted module backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt as of the end of 2023, and a nameplate capacity in India of 3.2 GW, the potential annual financial opportunity would amount to up to 950 million

(3.6.1.24) Cost to realize opportunity

700000000

(3.6.1.25) Explanation of cost calculation

Our first manufacturing facility in India represents an investment of approximately 700 million. The 3.2 GW facility started operations in the second half of 2023.

(3.6.1.26) Strategy to realize opportunity

Such expansion builds upon our existing presence of approximately 2.2 GWDC of modules sold in India.

Climate change

(3.6.1.1) Opportunity identifier

Select from:
☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Markets

☑ Use of public sector incentives

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

Recently enacted government support programs, such as the Inflation Reduction Act (IRA) of 2022, have contributed and are expected to continue to contribute to this momentum by providing solar module manufacturers, project developers, and project owners with tax incentives to accelerate the ongoing transition to clean energy. Although module average selling prices in many global markets have generally declined for several years, near-term module pricing in the United States, our primary market, remains relatively stable due in part to the rising demand for domestically manufactured modules as a result of the IRA. The IRA offers various tax credits, including the advanced manufacturing production credit under Section 45X of the Internal Revenue Code, for solar modules and components manufactured in the US and sold to third parties. Such credit, which may be refundable by the Internal Revenue Service or transferable to a third party, is available through 2032, subject to phase down beginning in 2030. For eligible components, the credit is equal to (i) 12 per square meter for a PV wafer, (ii) 4 cents multiplied by the capacity of a PV cell, and (iii) 7 cents multiplied by the capacity of a PV module. Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased production capacity

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Virtually certain (99–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party. Such credit may be refundable or transferable to a third party and is available from 2023 to 2032, subject to phase down beginning in 2030. We are in the process of expanding our manufacturing capacity in the U.S. and expect to have a U.S. nameplate capacity of approximately 14 GW in 2026. Assuming a manufacturing credit of 17 cents per watt and a U.S. capacity of 14GW, the potential financial impact amounts to approximately 2.38 billion per year.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

0

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

2380000000

(3.6.1.23) Explanation of financial effect figures

Based on the current form factor of our modules, we expect to qualify for a credit of approximately 17 cents per watt for each module produced in the United States and sold to a third party. Such credit may be refundable or transferable to a third party and is available from 2023 to 2032, subject to phase down beginning in 2030. We are in the process of expanding our manufacturing capacity in the U.S. and expect to have a U.S. nameplate capacity of approximately 14 GW in 2026. Assuming a manufacturing credit of 17 cents per watt and a U.S. capacity of 14GW, the potential financial impact amounts to approximately 2.38 billion per year.

(3.6.1.24) Cost to realize opportunity

4000000000

(3.6.1.25) Explanation of cost calculation

We are expanding our American footprint to an unprecedented level. Between 2016 and 2026, we expect to have invested approximately 4 billion in manufacturing and research and development facilities in the United States. Between 2024 and 2026, we anticipate that our three operating factories in Ohio will be joined by new facilities in Alabama and Louisiana to make up a 14 GW American manufacturing footprint.

(3.6.1.26) Strategy to realize opportunity

We are in the process of expanding our manufacturing capacity in the U.S. Our third U.S. manufacturing facility began commercial production of modules in early 2023. In 2022, we announced a 0.9 GW increase in nameplate capacity at our Ohio factories, as well as the construction of a new 3.5 GW Series 7 factory in Alabama, which was inaugurated on 9/26/24. In July 2023, we announced plans to build a fifth manufacturing facility in the United States. This planned fully vertically integrated facility is expected to increase the company's nameplate manufacturing capacity by 3.5 GW, bringing it to 14.1 GW by 2026. Between 2016 and 2026, we expect to have invested approximately 4 billion in manufacturing and research and development facilities in the United States.

Water

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ India

☑ Malaysia

☑ United States of America

☑ Viet Nam

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Saigon

☑ St. Lawrence

☑ Other, please specify **:**Muda River, Chembarabakkam Lake

(3.6.1.8) Organization specific description

While energy security and climate change have been important drivers for renewable energy adoption, water security provides an additional driver. The energy-water nexus associated with traditional energy sources is a growing concern particularly in water-stressed regions. Unlike thermal electric power plants and concentrated solar power, solar PV does not require any water to generate electricity during operation and is therefore ideally suited to meet the growing energy and water needs of arid, water-limited regions. In addition, First Solar's fully integrated thin film solar module manufacturing process requires less energy, water and semiconductor material than conventional crystalline silicon manufacturing. First Solar modules have the lowest carbon and water footprint and fastest energy payback time in the industry, measured on a lifecycle basis, which accounts for the energy, raw materials, water usage, and transportation across the supply chain; manufacturing process; and end-of-life module recycling. Our Series 7 module is our most eco-efficient module to date - On a life cycle basis, First Solar's Series 7 thin film modules use nearly 4 times less water than conventional crystalline silicon modules manufactured in carbon-intensive grids such as China. Customers with their own sustainability goals are particularly interested in understanding how much carbon a First Solar PV plant displaces as well as how much water is saved by avoiding the use of grid electricity.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

We began 2024 with a total contracted backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt. In comparison, we began 2023 with a contracted backlog totaling 61.4 GW with an aggregate value of 17.7 billion, or approximately 28.8 cents per watt.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.19) Anticipated financial effect figure in the medium-term - minimum (currency)

4400000000

(3.6.1.20) Anticipated financial effect figure in the medium-term - maximum (currency)

23300000000

(3.6.1.23) Explanation of financial effect figures

Net sales for 2023 increased by 27% to 3.3 billion compared to 2.6 billion in 2022. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2030 as we transfer control of the PV modules to the customers. We began 2024 with a total contracted backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt. In comparison, we began 2023 with a contracted backlog totaling 61.4 GW with an aggregate value of 17.7 billion, or approximately 28.8 cents per watt. As of July 30, 2024, our 2024 net sales guidance ranges from 4.4 billion to 4.6 billion.

(3.6.1.24) Cost to realize opportunity

1700000000

(3.6.1.25) Explanation of cost calculation

We are in the process of expanding our manufacturing capacity by approximately 8 GW. In aggregate, we currently expect our remaining investment in these facilities and upgrades to be approximately 1.8 billion to 2.0billion, which we expect to incur throughout 2024 and 2025.

(3.6.1.26) Strategy to realize opportunity

While energy security and climate change have been important drivers for renewable energy adoption, water security provides an additional driver. The energy-water nexus associated with traditional energy sources is a growing concern particularly in water-stressed regions. Unlike thermal electric power plants and CSP, solar PV does not require any water to generate electricity during operation and is therefore ideally suited to meet the growing energy and water needs of arid, water-limited regions. In addition, First Solar's fully integrated thin film solar module manufacturing process requires less energy, water and semiconductor material than conventional crystalline silicon PV's batch manufacturing process. As a result of various market opportunities and increased demand for our products, we commenced production of Series 7 modules at our third manufacturing facility in Ohio and our first manufacturing facility in India during 2023. We are in the process of expanding our manufacturing capacity by approximately 8 GW, including the construction of our fourth manufacturing facility in the United States, which is expected to commence operations in the second half of 2024; our fifth manufacturing facility in the United States, which is expected to commence operations in late 2025; and the expansion of our manufacturing footprint at our existing facilities in Ohio, which is expected to be completed in the first half of 2024. In aggregate, we currently expect our remaining investment in these facilities and upgrades to be approximately 1.7 billion, which we expect to incur throughout 2024 and 2025. The capital expenditures necessary to expand our capacity may be financed, in part, by advance payments from customers for module sales in future periods, the advanced manufacturing production credit described above, and/or near-term bridge financing instruments.

Water

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp3

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Markets

☑ Stronger competitive advantage

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ India

☑ Malaysia

☑ United States of America

☑ Viet Nam

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Saigon

☑ St. Lawrence

☑ Other, please specify **:**Muda River, Chembarabakkam Lake

(3.6.1.8) Organization specific description

Our commitment to 'Responsible Solar' is underpinned by the belief that solar should never come at the price of people or the planet and drives our company's environmental, social, governance (ESG) strategy and differentiation. 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, using less energy, water and semiconductor material than conventional crystalline silicon PV manufacturing. Due to our resource-efficient manufacturing process, First Solar modules have the lowest carbon and water footprint and fastest

energy payback time in the industry. We are continuously working to drive down the environmental footprint of our modules. Our next generation Series 7 solar modules have an even lower environmental footprint- with a carbon and water footprint that is nearly 4X lower than conventional crystalline silicon modules manufactured in China and an energy payback time that is approximately 5X faster.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include developers and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners. Net sales from our solar modules business amounted to approximately 3.3 billion in 2023, compared to 2.4 billion in 2022. Net sales from our modules segment increased by 700 million in 2023 primarily due to a 27% increase in the volume of watts sold and an increase in the average selling price per watt, compared to 2022

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

2400000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

3300000000

(3.6.1.23) Explanation of financial effect figures

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include developers and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners. Net sales from our solar modules business amounted to approximately 3.3 billion in 2023. Net sales from our modules segment increased by 700 million in 2023 primarily due to a 27% increase in the volume of watts sold and an increase in the average selling price per watt, compared to 2022.

(3.6.1.24) Cost to realize opportunity

1700000000

(3.6.1.25) Explanation of cost calculation

We are in the process of expanding our manufacturing capacity by approximately 8 GW. In aggregate, we currently expect our remaining investment in these facilities and upgrades to be approximately 1.7 billion, which we expect to incur throughout 2024 and 2025.

(3.6.1.26) Strategy to realize opportunity

Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. Third-party customers of our modules segment include developers and operators of systems, utilities, independent power producers, commercial and industrial companies, and other system owners. Net sales from our solar modules business amounted to approximately 3.3 billion in 2023. Net sales from our modules segment increased by 700 million in 2023 primarily due to a 27% increase in the volume of watts sold and an increase in the average selling price per watt, compared to 2022
[Add row]

(3.6.2) Provide the amount and proportion of your financial metrics in the reporting year that are aligned with the substantive effects of environmental opportunities.

Climate change

(3.6.2.1) Financial metric

Select from:

☑ Revenue

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

23300000000

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ 100%

(3.6.2.4) Explanation of financial figures

100% of our revenue comes from the sale of clean energy products. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2029 as we transfer control of the PV modules to the customers.

Water

(3.6.2.1) Financial metric

Select from:

☑ Revenue

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

23300000000

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ 100%

(3.6.2.4) Explanation of financial figures

100% of our revenue comes from the sale of clean energy products. As of December 31, 2023, we had entered into contracts with customers for the future sale of 78.3 GW of solar modules for an aggregate transaction price of 23.3 billion, which we expect to recognize as revenue through 2029 as we transfer control of the PV modules to the customers.

[Add row]

C4. Governance

(4.1) Does your organization have a board of directors or an equivalent governing body?

(4.1.1) Board of directors or equivalent governing body

Select from:

☑ Yes

(4.1.2) Frequency with which the board or equivalent meets

Select from:

☑ Quarterly

(4.1.3) Types of directors your board or equivalent is comprised of

Select all that apply

☑ Executive directors or equivalent

(4.1.4) Board diversity and inclusion policy

Select from:

☑ Yes, and it is publicly available

(4.1.5) Briefly describe what the policy covers

The Corporate Governance Guidelines have been adopted by the Board of Directors of First Solar, Inc. to assist the Board in the exercise of its responsibilities. The Board intends that these Guidelines serve as a flexible framework, not as a set of binding legal obligations. The Board's assessment of Board candidates includes, but is not limited to, consideration of (i) roles and contributions valuable to the business community; (ii) personal qualities of leadership, character, judgment and whether the candidate possesses and maintains throughout service on the Board a reputation in the community at large of integrity, trust, respect, competence and adherence to the highest ethical standards; (iii) relevant knowledge and diversity of perspective and experience in such areas as business, technology, finance and accounting, marketing, international business, government and other disciplines relevant to the Company's business; (iv) diversity of background, including diversity of gender, race and ethnicity; and (v) whether the candidate is free of conflicts and has the time required for preparation, participation and attendance at all meetings. Consistent with the foregoing, the Board and Nominating and Governance Committee are committed to actively seeking highly qualified women and minority

candidates as part of the search process for new Board members, and shall include one or more racially or ethnically diverse candidate in each search process for new Board members.

(4.1.6) Attach the policy (optional)

Corporate Governance Guidelines.pdf
[Fixed row]

(4.1.1) Is there board-level oversight of environmental issues within your organization?

Climate change

(4.1.1.1) Board-level oversight of this environmental issue

Select from:
☑ Yes

Water

(4.1.1.1) Board-level oversight of this environmental issue

Select from:
☑ Yes

Biodiversity

(4.1.1.1) Board-level oversight of this environmental issue

Select from:
☑ No, and we do not plan to within the next two years

(4.1.1.2) Primary reason for no board-level oversight of this environmental issue

Select from:

☑ Not an immediate strategic priority

(4.1.1.3) Explain why your organization does not have board-level oversight of this environmental issue

Pursuant to its charter, the Nominating and Governance Committee, one of the four committees of the Board of Directors, reviews the Company's environmental, social, and governance (ESG) strategy, policies and initiatives (other than initiatives delegated to other committees). This can include biodiversity-related issues. However, to date, biodiversity has not been identified as an immediate strategic priority. We use the WWF Biodiversity Risk Filter to screen our manufacturing locations for potential impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings as part of a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted an additional 12,000 saplings. In Vietnam, First Solar Sustainability Ambassadors and volunteers embarked on the "Plant Hope – Grow Life" journey at the Can Gio Biosphere Reserve in Ho Chi Minh City, one of the cities most threatened by rising sea levels, according to a report by the Organization for Economic Cooperation and Development (OECD). First Solar Vietnam planted 250 indigenous mangrove trees to help mitigate climate change-related flooding in the city.
[Fixed row]

(4.1.2) Identify the positions (do not include any names) of the individuals or committees on the board with accountability for environmental issues and provide details of the board's oversight of environmental issues.

Climate change

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

☑ Board-level committee

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Other policy applicable to the board, please specify :Nominating Governance Committee Charter

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing and guiding scenario analysis

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Approving corporate policies and/or commitments

☑ Overseeing and guiding acquisitions, mergers, and divestitures

☑ Overseeing and guiding the development of a climate transition plan

☑ Overseeing and guiding public policy engagement

☑ Reviewing and guiding innovation/R&D priorities

☑ Approving and/or overseeing employee incentives

☑ Overseeing and guiding major capital expenditures

☑ Monitoring the implementation of the business strategy

(4.1.2.7) Please explain

Pursuant to its charter, the Nominating and Governance Committee, one of the four committees of the Board of Directors, reviews the Company's environmental, social, and governance (ESG) strategy, policies and initiatives (other than initiatives delegated to other committees), which include climate-related issues. The Board's Nominating and Governance committee takes an active role in reviewing and overseeing the company's climate change goals and strategy, monitoring progress on environmental targets, as well as reviewing and overseeing the company's human rights due diligence efforts. First Solar's ESG Steering Committee, led by our Chief Executive Officer and consisting of our Executive Leadership Team, reports into the Nominating and Governance Committee on a biannual or more frequent basis. The Board's Nominating and Governance Committee recently reviewed the company's science-based targets and roadmap to Net Zero.

Water

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

☑ Board-level committee

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Other policy applicable to the board, please specify **:**Nominating Governance and Committee Charter

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Approving corporate policies and/or commitments

☑ Reviewing and guiding innovation/R&D priorities

☑ Approving and/or overseeing employee incentives

☑ Overseeing and guiding major capital expenditures

(4.1.2.7) Please explain

Pursuant to its charter, the Nominating and Governance Committee, one of the four committees of the Board of Directors, reviews the Company's environmental, social, and governance (ESG) strategy, policies and initiatives (other than initiatives delegated to other committees), which include climate-related issues. The Board's Nominating and Governance committee takes an active role in reviewing and overseeing the company's climate change goals and strategy, monitoring progress on environmental targets, as well as reviewing and overseeing the company's human rights due diligence efforts. First Solar's ESG Steering Committee, led by our Chief Executive Officer and consisting of our Executive Leadership Team, reports into the Nominating and Governance Committee on a biannual or more frequent basis. The Board's Nominating and Governance Committee receives updates from management on a biannual (or more frequent) basis about significant ESG activities including, among others: (i) energy, emissions, and resource efficiency; (ii) inclusion, diversity, and belonging; (iii) product innovation and reliability; (iv) responsible sourcing and human rights; (v) public policy; and (vi) circular economy. In 2023, the Board's Nominating and Governance Committee reviewed the

company's ESG dashboard and science-based targets validated by the SBTi.. The nominating and governance committee considers risks related to corporate governance practices, including the Company's ESG strategy, policies, and initiatives.
[Fixed row]

(4.2) Does your organization's board have competency on environmental issues?

Climate change

(4.2.1) Board-level competency on this environmental issue

Select from:
☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply
☑ Consulting regularly with an internal, permanent, subject-expert working group
☑ Engaging regularly with external stakeholders and experts on environmental issues
☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience
☑ Executive-level experience in a role focused on environmental issues
☑ Management-level experience in a role focused on environmental issues
☑ Staff-level experience in a role focused on environmental issues

Water

(4.2.1) Board-level competency on this environmental issue

Select from:

☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply

☑ Consulting regularly with an internal, permanent, subject-expert working group

☑ Engaging regularly with external stakeholders and experts on environmental issues

☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience

☑ Executive-level experience in a role focused on environmental issues

☑ Management-level experience in a role focused on environmental issues

☑ Staff-level experience in a role focused on environmental issues

[Fixed row]

(4.3) Is there management-level responsibility for environmental issues within your organization?

Climate change

(4.3.1) Management-level responsibility for this environmental issue

Select from:

☑ Yes

Water

(4.3.1) Management-level responsibility for this environmental issue

Select from:

☑ Yes

Biodiversity

(4.3.1) Management-level responsibility for this environmental issue

Select from:

☑ No, but we plan to within the next two years

(4.3.2) Primary reason for no management-level responsibility for environmental issues

Select from:

☑ Not an immediate strategic priority

(4.3.3) Explain why your organization does not have management-level responsibility for environmental issues

First Solar's ESG Steering Committee, led by our Chief Executive Officer and consisting of our Executive Leadership Team, has the highest level of direct responsibility for ESG matters. First Solar's ESG and Sustainability team coordinates the cross-functional task force of ESG focus leaders responsible for defining, measuring, and reporting on progress to the ESG Steering Committee on a quarterly basis. The cross-functional ESG task force is responsible for identifying strategic ESG risks and opportunities, gaps, and challenges; anticipating ESG trends that could impact the company; and proposing new ESG policies, practices, targets, metrics, and disclosures. First Solar's ESG focus leaders help advance the company's approach to Responsible Solar by driving progress on key strategic ESG areas, including: (i) Energy, Emissions, and Resource Efficiency, (ii) Circular Economy, (iii) Inclusion, Diversity, and Belonging, (iv) Innovative Products, (v) Public Policy and Public Sentiment, (vi) Reliable Products, (vii) Responsible Sourcing and Human Rights. To date, biodiversity has not been identified as an immediate strategic priority.
[Fixed row]

(4.3.1) Provide the highest senior management-level positions or committees with responsibility for environmental issues (do not include the names of individuals).

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Engagement

☑ Managing public policy engagement related to environmental issues

☑ Managing supplier compliance with environmental requirements

☑ Managing value chain engagement related to environmental issues

Policies, commitments, and targets

☑ Monitoring compliance with corporate environmental policies and/or commitments

☑ Measuring progress towards environmental corporate targets

☑ Measuring progress towards environmental science-based targets

☑ Setting corporate environmental policies and/or commitments

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a business strategy which considers environmental issues

☑ Managing annual budgets related to environmental issues

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

First Solar has fully integrated environmental, social, governance (ESG) oversight, which includes climate-related issues, at the executive and board levels. First Solar's Chief Executive Officer (CEO) has overall responsibility for climate-related issues within the company and leads the company's ESG Steering Committee which consists of the company's Executive Leadership Team. Led by the CEO, the ESG Steering Committee provides sustainability and climate-related updates to the Nominating and Governance Committee of the Board of Directors on a biannual or more frequent basis. Members of the ESG Steering Committee hold operational responsibility for climate change actions and other ESG priorities which are driven by a cross-functional taskforce of ESG focus leaders. First Solar's ESG and Sustainability team coordinates the cross-functional taskforce of ESG focus leaders responsible for defining, measuring and reporting on progress to the ESG Steering Committee on a quarterly or more frequent basis. The quarterly updates include assessing progress on company targets relating to greenhouse gas emissions reductions, reviewing and approving global renewable energy project opportunities, monitoring manufacturing energy and water intensity, driving down the product carbon footprint and setting scope 3 emissions targets and engaging with carbon intensive suppliers, among other topics. First Solar's ESG focus leaders help advance the company's approach to Responsible Solar by driving progress on key strategic ESG areas including: Energy, Emissions & Resource Efficiency; Circular Economy; Inclusion, Diversity & Belonging; Innovative Products; Public Policy and Public Sentiment; Reliable Products; Responsible Sourcing and Human Rights. Our commitment to 'Responsible Solar' is underpinned by the belief that solar should never come at the price of people or the planet and drives our company's environmental, social, governance (ESG) strategy and differentiation.

Water

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Policies, commitments, and targets

☑ Measuring progress towards environmental corporate targets

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Managing annual budgets related to environmental issues

☑ Managing major capital and/or operational expenditures relating to environmental issues

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

First Solar has fully integrated environmental, social, governance (ESG) oversight, which includes water-related issues, at the executive and board level. First Solar's Chief Executive Officer (CEO) has overall responsibility for water-related issues within the company as the top owner of enterprise risk and head of the ESG Steering Committee which consists of the company's Executive Leadership Team. ESG updates are provided to the Board's Nominating and Governance Committee and enterprise risk updates (which can include water risks) are provided to the Audit Committee on a biannual or more frequent basis. Biannual ESG board updates include reviewing progress on company targets relating to manufacturing water intensity and opportunities relating to the company's approach to Responsible Solar. Members of the ESG Steering Committee hold operational responsibility for water management and other ESG priorities which are driven by a cross-functional taskforce of ESG focus leaders.
[Add row]

(4.5) Do you provide monetary incentives for the management of environmental issues, including the attainment of targets?

Climate change

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:

☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

100

(4.5.3) Please explain

Our Executive Performance Equity Plan (EPEP), a long-term incentive program for key executive officers, includes metrics on sustainable products and innovation. The EPEP is intended to reward the achievement of performance objectives that align with our long-term strategic plans. We use our annual bonus program to encourage the achievement of specified strategic, financial, and operational objectives to help us achieve our mission to provide cost-advantaged solar technology through innovation, customer engagement, industry leadership, and operational excellence.

Water

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:
☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

100

(4.5.3) Please explain

Certain members of the ESG Steering Committee hold operational responsibility for water and resource efficiency targets and other ESG priorities which are driven by a cross-functional taskforce of ESG focus leaders. Bonus payouts for all associates, including the executive leadership team, are based on the achievement of their operational goals and objectives.
[Fixed row]

(4.5.1) Provide further details on the monetary incentives provided for the management of environmental issues (do not include the names of individuals).

Climate change

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Corporate executive team

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

☑ Shares

(4.5.1.3) Performance metrics

Strategy and financial planning

☑ Increased investment in environmental R&D and innovation

☑ Increased proportion of revenue from low environmental impact products or services

Emission reduction

☑ Reduction in emissions intensity

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Both Short-Term and Long-Term Incentive Plan, or equivalent

(4.5.1.5) Further details of incentives

First Solar's corporate bonus plan (short-term incentive) and its Executive Performance Equity Plan (long-term incentive) included a metric on driving down the cost per watt of the company's low-carbon products.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

First Solar incentivizes initiatives which drive reductions in PV solar module manufacturing and/or operating costs and in turn reduce the costs of PV solar, enabling PV solar to be cost competitive with conventional technologies and become more widely deployed and accepted.

Water

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Corporate executive team

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

(4.5.1.3) Performance metrics

Resource use and efficiency

☑ Improvements in water efficiency – direct operations

☑ Other resource use and efficiency-related metrics, please specify **:**Reduce operational cost

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Both Short-Term and Long-Term Incentive Plan, or equivalent

(4.5.1.5) Further details of incentives

Certain members of the ESG Steering Committee hold operational responsibility for manufacturing water and resource efficiency targets and other ESG priorities which are driven by a cross-functional taskforce of ESG focus leaders. Bonus payouts for all associates, including the executive leadership team, are based on the achievement of their operational goals and objectives.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

Since 2009, First Solar's manufacturing water intensity (water consumption per watt produced) decreased by approximately 84% due to significant improvements in module efficiency, manufacturing throughput, and the implementation of water conservation and recycling projects in our manufacturing and recycling operations. In 2023, our manufacturing water intensity per watt produced decreased by approximately 6% compared to 2022. While our production increased by 33% in 2023 compared to 2022, our absolute water withdrawals increased by approximately 23%, and our manufacturing water intensity decreased due to increased water recycling initiatives. In total, we recycled 318 million liters of water in 2023, an 88% increase over 2022.

Climate change

(4.5.1.1) Position entitled to monetary incentive

Facility/Unit/Site management

☑ Facilities manager

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

☑ Salary increase

(4.5.1.3) Performance metrics

Resource use and efficiency

☑ Energy efficiency improvement

☑ Reduction in total energy consumption

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ The incentives are not linked to an incentive plan, or equivalent (e.g. discretionary bonus in the reporting year)

(4.5.1.5) Further details of incentives

Energy saving targets are included in the performance goals of our facilities team. Bonus payouts and salary increases are based on the achievement of a department's operational goals and objectives.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

First Solar incentivizes initiatives which drive reductions in PV solar module manufacturing and/or operating costs and in turn reduce the costs of PV solar, enabling PV solar to be cost competitive with conventional technologies and become more widely deployed and accepted. Since 2020, we have reduced our energy usage per watt produced by 15% and are halfway toward meeting our 2028 energy efficiency target. In 2023, we installed a 300 kW PV carport array in Ohio and consumed more than 7.5 million kilowatt hours of renewable electricity from onsite solar installations globally
[Add row]

(4.6) Does your organization have an environmental policy that addresses environmental issues?

	Does your organization have any environmental policies?
	Select from: ☑ Yes

[Fixed row]

(4.6.1) Provide details of your environmental policies.

Row 1

(4.6.1.1) Environmental issues covered

Select all that apply
☑ Climate change

☑ Water

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(4.6.1.4) Explain the coverage

First Solar is committed to minimizing the environmental impacts and enhancing the social and economic benefits of our products and projects across their life cycle, from raw material sourcing through product end-of-life. Our priorities and guiding principles include: -Manufacturing modules that create clean, affordable electricity, allowing us to realize the benefits of electrification without the adverse environmental impacts of conventional fossil fuel energy sources. -Operating world-class manufacturing facilities, applying responsible PV power plant construction practices and maintaining environmental, health and safety programs and policies that protect the environment and ensure the safety of our associates and the communities in which we operate. - Measuring, tracking and reporting on a number of sustainability performance metrics including our recordable injury rate, energy and water use, waste generation, and greenhouse gas emissions as part of our commitment to transparency. - Contributing to a circular economy by operating an industry leading module recycling program as part of our commitment to responsible product life cycle management. - Engaging with suppliers on responsible and sustainable raw material sourcing as part of our commitment to operating a supply chain free of conflict minerals. - Participating as a responsible citizen in the communities where we operate. - Creating enduring economic value by implementing a long-term roadmap to achieve our goals

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to a circular economy strategy

☑ Commitment to comply with regulations and mandatory standards

☑ Commitment to take environmental action beyond regulatory compliance

☑ Commitment to stakeholder engagement and capacity building on environmental issues

Climate-specific commitments

☑ Commitment to 100% renewable energy

☑ Commitment to net-zero emissions

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with the Paris Agreement

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

First Solar Corporate Sustainability Policy.pdf

Row 2

(4.6.1.1) Environmental issues covered

Select all that apply

☑ Water

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

(4.6.1.4) Explain the coverage

First Solar recognizes that access to clean water is a fundamental human right, in line with Goal 6 of the United Nations' 2030 Agenda for Sustainable Development. Water is vital to First Solar's operations, as our thin-film solar photovoltaic (PV) manufacturing process relies on ultra-pure water, and PV power plant construction often requires water for site preparation and dust suppression. While direct onsite water use represents only approximately 12% of our product's lifecycle water withdrawal, the remainder is related to indirect water use from grid electricity consumption and raw materials. Aligned with our commitment to minimizing environmental impacts and enhancing the social and economic benefits of our products and projects across their lifecycle, our water-related priorities include: - Improving the water efficiency of our operations through conservation, recycling, and reuse. - Publishing metrics on water usage and conservation initiatives as part of our commitment to transparency. - Supporting community projects that provide access to clean energy and water, in alignment with UN Sustainable Development Goals 6 and 7. - Raising awareness of the energy-water nexus and partnering on innovative solutions to water challenges.

(4.6.1.5) Environmental policy content

Water-specific commitments

☑ Commitment to safely managed WASH in local communities

☑ Commitment to water stewardship and/or collective action

☑ Other water-related commitment, please specify **:**Improve water efficiency

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with Sustainable Development Goal 6 on Clean Water and Sanitation

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

First Solar Water Policy_vf.pdf

Row 4

(4.6.1.1) Environmental issues covered

Select all that apply

☑ Climate change

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

(4.6.1.4) Explain the coverage

At First Solar, we are committed to fostering a safe work environment and minimizing the environmental impact of our operations. Our Environmental, Health, and Safety (EHS) Policy drives continuous improvement in the design, manufacture, and end-of-life management of our solar products, ensuring they are safe and environmentally responsible. We comply with all applicable EHS regulations and industry standards, and we expect the same from our contractors and suppliers. We prioritize conserving natural resources, reducing waste, protecting biodiversity, and preventing pollution in every aspect of our business, reflecting our dedication to leading the world towards a sustainable energy future.

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to implementation of nature-based solutions that support landscape restoration and long-term protection of natural ecosystems

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with another global environmental treaty or policy goal, please specify **:**ISO 14001 and ISO 45001 management systems

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

First-Solar-EHS-Policy.pdf

Row 5

(4.6.1.1) Environmental issues covered

Select all that apply

☑ Climate change

☑ Water

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

(4.6.1.4) Explain the coverage

As a member of the Responsible Business Alliance (“RBA”), we implement the RBA Code of Conduct within our operations and our supply chain. Our Labor and Human Rights Policy outlines our expectations for suppliers: "Under the terms of First Solar’s supplier agreements, suppliers must commit to comply with the RBA Code of Conduct and require their suppliers to do the same." The RBA Code is a set of social, environmental and ethical industry standards. The provisions in the RBA Code are derived from internationally recognized standards including the ILO Declaration on Fundamental Principles and Rights at Work and the UN Universal Declaration of Human Rights, among others. Among other requirements, the RBA Code requires participants to 1) establish and report against an absolute corporate-wide greenhouse gas reduction goal, 2) track, document and publicly report energy consumption and all Scopes 1, 2, and significant categories of Scope 3 greenhouse gas emissions, 3) look for methods to improve energy efficiency and to minimize energy consumption and greenhouse gas emissions, 4) implement a

water management program and seek opportunities to conserve water. The RBA Code is available at https://www.responsiblebusiness.org/media/docs/RBACodeofConduct8.0_English.pdf

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to comply with regulations and mandatory standards

☑ Commitment to take environmental action beyond regulatory compliance

Climate-specific commitments

☑ Other climate-related commitment, please specify **:**set absolute GHG emissions reduction target and publicly disclose scope 1 , scope 2, and scope 3 emissions

Water-specific commitments

☑ Commitment to reduce water consumption volumes

☑ Commitment to reduce water withdrawal volumes

☑ Commitment to control/reduce/eliminate water pollution

☑ Commitment to safely managed WASH in local communities

☑ Commitment to the conservation of freshwater ecosystems

☑ Commitment to water stewardship and/or collective action

Social commitments

☑ Commitment to promote gender equality and women's empowerment

☑ Commitment to respect internationally recognized human rights

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with another global environmental treaty or policy goal, please specify **:**Montreal Protocol, ISO 14001 environmental management standard

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

First-Solar-Labor-and-Human-Rights-Policy website.pdf
[Add row]

(4.10) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

(4.10.1) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

Select from:
☑ Yes

(4.10.2) Collaborative framework or initiative

Select all that apply
☑ RE100
☑ Science-Based Targets Initiative (SBTi)
☑ Other, please specify **:**Business Ambition for 1.5°C, Corporate Clean Energy Alliance

(4.10.3) Describe your organization's role within each framework or initiative

First Solar joined RE100 in 2020 and committed to powering our global operations with 100% renewable energy by 2028. RE100 is a global initiative dedicated to accelerating the shift to zero-carbon grids, led by The Climate Group in partnership with CDP. First Solar is also a member of the Business Ambition for 1.5C campaign and set science-based targets to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028 and achieve Net Zero emissions by 2050, relative to 2020. Our near-term science-based emissions reduction target and net-zero target are in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels and have been approved by the Science Based Targets Initiative (SBTi). In 2021, we became a member of the Corporate Clean Energy Alliance, which aims to rapidly deploy transformation enabling technologies and expand access to clean energy resources across the Southeast Asia region.
[Fixed row]

(4.11) In the reporting year, did your organization engage in activities that could directly or indirectly influence policy, law, or regulation that may (positively or negatively) impact the environment?

(4.11.1) External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the environment

Select all that apply

☑ Yes, we engaged directly with policy makers

☑ Yes, we engaged indirectly through, and/or provided financial or in-kind support to a trade association or other intermediary organization or individual whose activities could influence policy, law, or regulation

(4.11.2) Indicate whether your organization has a public commitment or position statement to conduct your engagement activities in line with global environmental treaties or policy goals

Select from:

☑ Yes, we have a public commitment or position statement in line with global environmental treaties or policy goals

(4.11.3) Global environmental treaties or policy goals in line with public commitment or position statement

Select all that apply

☑ Paris Agreement

(4.11.4) Attach commitment or position statement

FirstSolar_Sustainability-Report_2024.pdf

(4.11.5) Indicate whether your organization is registered on a transparency register

Select from:

☑ Yes

(4.11.6) Types of transparency register your organization is registered on

Select all that apply

☑ Mandatory government register

(4.11.7) Disclose the transparency registers on which your organization is registered & the relevant ID numbers for your organization

US Federal lobbying reports are available at: Lobbying Disclosure, Office of the Clerk (house.gov), Home Lobbying Disclosure (senate.gov) for First Solar Inc. 41243. Transparency Register Europe (First Solar GmbH 675804943841-40, First Solar European Technology Center AB 830220348444-04).

(4.11.8) Describe the process your organization has in place to ensure that your external engagement activities are consistent with your environmental commitments and/or transition plan

First Solar participates in the political process to help shape public policy, legislation and other governmental actions that are consistent with First Solar's business objectives and values. First Solar's VP of Global Policy, Marketing and Sustainability is part of the cross-functional ESG taskforce that is responsible for driving the company's approach to Responsible Solar, including public policy in alignment with the goals of the Paris Agreement among other topics. Our commitment to 'Responsible Solar' drives our company's ESG strategy, advocacy and differentiation and is interwoven into every aspect of our business and product lifecycle- from raw material sourcing to recycling. This includes manufacturing using less energy, water and semiconductor, enabling faster decarbonization through lower embodied carbon, and maximizing resource recovery to enhance circularity. First Solar engages with universities and the wider scientific community to drive our R&D efforts, reduce the environmental footprint of our products, advance PV recycling technology and enhance circularity in line with our commitment to Responsible Solar and our overarching ESG strategy. In our external affairs, we frequently highlight the urgent need for a responsible approach to solar manufacturing, trade and deployment as the fight against climate change accelerates and companies and governments commit to going Net Zero to limit global warming to 1.5 degrees Celsius. How and where solar panels and their components are manufactured determines how many greenhouse gas emissions they will be able to avoid and displace. Our thin film CdTe solar modules manufactured in the US have a carbon footprint that is nearly 4 times lower than conventional crystalline silicon modules manufactured in China. ESG progress updates, including key areas such as public policy, are provided on a quarterly basis to the ESG steering committee, which consists of our executive leadership team. Updates on ESG focus areas including public policy are provided on a biannual or more frequent basis to the Board's Nominating and Governance committee which reviews the Company's ESG strategy, policies and initiatives (other than initiatives delegated to other committees). Public policy and advocacy updates are also provided on a quarterly basis to the full Board of Directors. This comprehensive ESG oversight at the board and executive leadership levels helps ensure alignment across the company.
[Fixed row]

(4.11.1) On what policies, laws, or regulations that may (positively or negatively) impact the environment has your organization been engaging directly with policy makers in the reporting year?

Row 1

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The Inflation Reduction Act ("IRA") established tax credits for domestic solar manufacturers to help boost the U.S. solar supply chain, create American jobs, compete with Chinese manufacturers and support energy independence, and created incentives to drive more renewable project buying decisions to low-carbon solutions and domestic content.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply

☑ Climate change

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Financial mechanisms (e.g., taxes, subsidies, etc.)

☑ Subsidies for renewable energy projects

☑ Subsidies on products or services

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ National

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ United States of America

(4.11.1.6) Your organization’s position on the policy, law, or regulation

Select from:

☑ Support with no exceptions

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply

☑ Regular meetings

☑ Ad-hoc meetings

☑ Provided funding or in-kind support

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

206500

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

The IRA is central to our climate transition plan as it is intended to accelerate the country's ongoing transition to clean energy. The provisions of the IRA are generally effective for tax years beginning after 2022. Among other things, the financial incentives provided by the IRA are expected to significantly increase production and demand for modules manufactured in the United States. The IRA offers various tax credits, including the advanced manufacturing production credit, pursuant to Section 45X of the Internal Revenue Code (the "IRC"), for solar modules and solar module components manufactured in the United States and sold to third parties. The Inflation Reduction Act was the key catalyst that led the company to choose the U.S. for our latest factory. We are in the process of expanding our manufacturing capacity in the U.S. and by 2026, we expect to have a U.S. nameplate capacity of approximately 14 GW in 2026. Over the past year and including this announcement, First Solar has committed to over 2.8 billion in capital investment and 7.9 GW of additional manufacturing capacity in the US. By expanding America's solar manufacturing base, and the value chains that support it, we are working to ensure that the US enters the next decade in a position of strength, fully capable of producing the technology it needs to complete and sustain its transition to a sustainable energy future. First Solar is engaged at all levels of government to ensure the regulations that implement the IRA remain true to the Congressional intent to drive American energy independence, reduce greenhouse gas emissions, and invest in future energy technologies. Corporate advocacy extends to cause federal investments to prefer low carbon solar over other solar products, as measured by EPEAT certification (GSA, DOD procurement, per EPA guidelines). Additional work is in process in various versions of carbon border adjustments currently being contemplated in Congress. Contributions from the First Solar PAC program generally support candidates, parties and/or committees whose views on specific issues are consistent with First Solar's interests. First Solar PAC program contributions are made without regard to the private political preferences of the Company's executive management team or any other Company executive. In 2023, First Solar contributed 200,000 to Future Forward USA Action, in addition to various donations to specific U.S. federal candidates.

(4.11.1.11) Indicate if you have evaluated whether your organization's engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 2

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The anti-dumping and countervailing duty tariffs on certain imported crystalline silicon PV cells and modules are intended to ensure U.S. manufacturers can compete on a level playing field. Advocacy extends to ensuring the quasi-judicial process in place for imports made from Chinese-sourced cells remains in place, and investigates whether similar mechanisms are required to level the playing field with certain South-East Asian solar imports.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply

☑ Climate change

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Energy and renewables

☑ Other energy and renewables, please specify **:**Trade remedies to protect US industries and workers from unfair trade practices

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ National

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ United States of America

(4.11.1.6) Your organization’s position on the policy, law, or regulation

Select from:

☑ Support with no exceptions

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply

☑ Regular meetings

☑ Ad-hoc meetings

☑ Provided funding or in-kind support

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

6500

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

Upholding trade laws and promoting domestic manufacturing is central to the achievement of our climate transition plan. The reduction, elimination, or expiration of tariffs or other trade remedies imposed on solar cells and modules, could negatively impact demand and/or price levels for our solar modules and limit our growth or lead to a reduction in our net sales or increase our costs, thereby adversely impacting our operating results. In the context of the fight against climate change, all PV technologies are not created equal. Where and how a PV module and its components are manufactured significantly impacts its environmental profile and determines how many greenhouse gas emissions they will be able to avoid and displace. According to a 2022 study by the National Renewable Energy Laboratory (NREL), CdTe PV modules manufactured in the U.S. have a carbon footprint that is more than 2.5X lower than crystalline silicon modules manufactured in China. Relying on crystalline silicon modules produced in coal-intensive grids could consume as much as 14% of the remaining carbon budget for a 1.5C world, resulting in 68 billion metric tons of CO2. For perspective, the world emits approximately 50 billion metric tons of CO2 per year. Our position is therefore aligned with the goals of the Paris Agreement. First Solar’s political engagement in 2023 primarily focused on working toward our policy objectives including strategies to level the playing field for US solar manufacturing. We contributed 6500 in total for 2023 to support five federal candidates whose views on specific issues are consistent with First Solar’s interests.

(4.11.1.11) Indicate if you have evaluated whether your organization’s engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 3

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The EU Net-Zero Industry Act (NZIA) which aims to reduce Europe's dependency for net-zero technologies and their key components from a dominant source, addressing barriers to scaling up production in Europe. The NZIA boosts demand for renewable energy by implementing mandatory non-price criteria on sustainability, resilience and other factors in procurement procedures for clean technologies and renewable energy auctions.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply

☑ Climate change

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Financial mechanisms (e.g., taxes, subsidies, etc.)

☑ Subsidies for renewable energy projects

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ Regional

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ Italy
☑ Cyprus
☑ France
☑ Greece
☑ Malta
☑ Denmark
☑ Estonia
☑ Finland
☑ Germany
☑ Hungary
☑ Romania
☑ Portugal
☑ Slovakia
☑ Slovenia
☑ Lithuania
☑ Spain
☑ Austria
☑ Belgium
☑ Croatia
☑ Czechia
☑ Ireland
☑ Latvia
☑ Poland
☑ Sweden
☑ Bulgaria
☑ Luxembourg
☑ Netherlands

(4.11.1.6) Your organization’s position on the policy, law, or regulation

Select from:
☑ Support with no exceptions

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply
☑ Regular meetings
☑ Ad-hoc meetings
☑ Discussion in public forums
☑ Participation in working groups organized by policy makers
☑ Responding to consultations

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

0

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

The Net-Zero Industry Act has the potential to boost demand for more sustainable photovoltaics by implementing mandatory non-price criteria in procurement procedures for clean technologies and renewable energy auctions. The NZIA requires public authorities to consider criteria such as sustainability, resilience, cybersecurity and other qualitative factors. However, these criteria are only as robust as the methodologies they are based on. Our thin film module technology has the smallest carbon footprint of any competing PV solar technology, measured on a lifecycle basis. We are committed to driving down the carbon footprint of our products and consistently advocate for strong PV carbon footprint methodologies (like those described in the EPEAT ecolabel's ultra-low carbon solar criteria) which minimize the potential for greenwashing. Our commitment to 'Responsible Solar' is underpinned by the belief that solar should never come at the price of people or the planet and drives our company's environmental, social, governance (ESG) strategy and differentiation. Our position is aligned with the goals of the Paris Agreement. According to a 2022 study by the U.S. National Renewable Energy Laboratory, continuing to rely on silicon solar modules produced in coal-intensive grids, such as those in China, could consume as much as 14% of the remaining carbon budget that can be emitted before exceeding the 1.5 degrees Celsius limit. This policy is central to the achievement of our climate transition plan and determines whether the transition is just and sustainable. Our position is aligned with the goals of the Paris Agreement.

(4.11.1.11) Indicate if you have evaluated whether your organization's engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 4

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The EU Ecodesign and Energy Label Directive establishes a framework for setting environmental and energy performance related requirements on specific product groups, including photovoltaic modules.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply

☑ Climate change

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Low-impact production and innovation

☑ Low environmental impact innovation and R&D

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ Regional

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ Italy
☑ Cyprus
☑ France
☑ Greece
☑ Malta
☑ Denmark
☑ Estonia
☑ Finland
☑ Germany
☑ Hungary
☑ Romania
☑ Spain
☑ Austria
☑ Belgium
☑ Croatia
☑ Czechia
☑ Ireland
☑ Latvia
☑ Poland
☑ Sweden
☑ Bulgaria
☑ Luxembourg

☑ Portugal
☑ Slovakia
☑ Slovenia
☑ Lithuania
☑ Netherlands

(4.11.1.6) Your organization’s position on the policy, law, or regulation

Select from:
☑ Support with major exceptions

(4.11.1.7) Details of any exceptions and your organization’s proposed alternative approach to the policy, law, or regulation

First Solar supports the European Solar Manufacturing Council's position on the EU Ecodesign and Energy Label Directives: The Ecodesign and Energy Labelling legislations, which set carbon footprint thresholds for PV modules to enter the EU market, have the potential to uphold the competitive advantage of the European PV manufacturing value chain, and could, to some extent counteract the weaker environmental laws outside the EU. But this if — and only if — the carbon footprint calculation methodology prevents greenwashing and closes loopholes for manipulation. If this cannot be achieved, and foreign manufacturers are allowed to buy themselves a lower carbon footprint through cheap green certificates that are less strict than the EU equivalents, or by manipulating warranties etc., the implementation of the Ecodesign legislation would have a detrimental effect on the European PV industry.

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply
☑ Regular meetings
☑ Ad-hoc meetings
☑ Discussion in public forums
☑ Participation in working groups organized by policy makers
☑ Responding to consultations

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

0

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

The EU Ecodesign Directive has the potential to encourage PV manufacturers to reduce the embodied carbon of solar modules. How you manufacture and where you manufacture a solar module and its components can significantly impact the environmental footprint of a solar module. Although solar PV manufacturing represents a small percentage of global emissions today, a business-as-usual approach would lead it to exceed aluminum manufacturing (the fourth most emissions-intensive industrial commodity) by 2040. A 2022 study by the National Renewable Energy Laboratory (NREL) estimated that relying on crystalline silicon modules produced in coal-intensive grids could consume as much as 14% of the remaining carbon budget for a 1.5C world, resulting in 68 billion metric tons of CO2. Our commitment to 'Responsible Solar' is underpinned by the belief that solar should never come at the price of people or the planet and drives our company's ESG strategy and differentiation. Responsible Solar is solar that embodies sustainability and meaningfully supports the fight against climate change. We are committed to driving down the carbon footprint of our products and consistently advocate for strong PV carbon footprint methodologies (like those described in the EPEAT ecolabel's ultra-low carbon solar criteria) which minimize the potential for greenwashing. Our position is aligned with the goals of the Paris Agreement.

(4.11.1.11) Indicate if you have evaluated whether your organization's engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 5

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The Approved List of Models and Manufacturers ("ALMM") was introduced in 2021 as a non-tariff barrier to incentivize local manufacturing of PV modules by approving the list of models and manufacturers who can participate in certain solar development projects. The ALMM is approved by the Ministry of New and Renewable Energy, and any modifications to the list and its application may affect future investments in solar module manufacturing in India.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply

☑ Climate change

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Energy and renewables

☑ Other energy and renewables, please specify **:**Industrial policy and incentivizing domestic solar manufacturing

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ National

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ India

(4.11.1.6) Your organization’s position on the policy, law, or regulation

Select from:

☑ Support with minor exceptions

(4.11.1.7) Details of any exceptions and your organization’s proposed alternative approach to the policy, law, or regulation

First Solar supports the ALMM with a separate threshold for thin film modules to ensure technology neutrality. The most comprehensive way to measure real-world module performance is to use lifetime specific energy yield, because it accounts for a solar module’s output power through the full range of real-world conditions, including energy loss factors, which are not accounted for in efficiency ratings, alone.

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply

☑ Regular meetings

☑ Ad-hoc meetings

☑ Participation in working groups organized by policy makers

☑ Responding to consultations

☑ Submitting written proposals/inquiries

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

0

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

In March 2023, the government of India temporarily suspended the ALMM, thereby exempting solar project developers from procuring modules from companies included in the ALMM. Our operating results could be adversely impacted if such suspension is extended in future periods or if the ALMM restriction is significantly relaxed to allow modules to be imported from countries that are part of the Association of Southeast Asian Nations. In April 2024, the government of India reimposed the ALMM, thereby requiring solar project developers to procure qualifying modules from companies on the list, which includes our Indian manufacturing facility. Also in April 2024, the ALMM was amended toinclude specific minimum conversion efficiency thresholds for CdTe solar technologies starting at 18% for solar lighting, 18.5% for rooftop applications, and 19% for utility-scale applications. Our ability to sell modules in the Indian market depends on the inclusion of our modules on the ALMM. Measures of success included being added to the ALMM in 2024. We consistently advocate for industrial and trade policies that provide a level playing field for manufacturers of solar cells and modules. a strong domestic solar manufacturing industry not only promotes energy independence but is critical to completing and sustaining the transition to a sustainable energy future. Our position is aligned with the goals of the Paris Agreement.

(4.11.1.11) Indicate if you have evaluated whether your organization's engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

[Add row]

(4.11.2) Provide details of your indirect engagement on policy, law, or regulation that may (positively or negatively) impact the environment through trade associations or other intermediary organizations or individuals in the reporting year.

Row 1

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Global

☑ Other global trade association, please specify **:**Clean Energy Buyers Association

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

The Clean Energy Buyers Association (CEBA) is a business association that activates a community of energy customers and partners to deploy market and policy solutions for a carbon-free energy system. CEBA aspires to grow a global community of energy customers will allow its organizations to contribute to decarbonization of worldwide electricity by 60% by 2030 as established by the Intergovernmental Panel on Climate Change (IPCC). We work closely with their research arm (Clean Energy Buyers Institute) to raise awareness about the need to drive down the embodied carbon of solar. Although solar PV manufacturing represents a small percentage of global emissions today, a business-as-usual approach would lead it to exceed aluminum manufacturing (the fourth most emissions-intensive industrial commodity) by 2040.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

100000

(4.11.2.10) Describe the aim of this funding and how it could influence policy, law or regulation that may impact the environment

From 2022 to 2024, First Solar donated 100,000 as a foundational funder of the Clean Energy Buyers Institute's (CEBI) Beyond the Megawatt Initiative, which aims to create a resilient, equitable, and environmentally sustainable energy system by leveraging energy customer demands for clean energy. The initiative is developing procurement guidance to help energy buyers embed environmental sustainability, social equity and resilience in energy buyers' clean energy procurement process. In June 2023, First Solar joined more than 18 other leading companies representing over 498 billion in annual revenues to become a signatory of the Principles for Purpose Driven Energy Procurement.

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 2

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Global

☑ Other global trade association, please specify :Climate Leadership Council

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

As a founding member, First Solar supports the Climate Leadership Council's mission and carbon dividends plan. If enacted, the Bipartisan Climate Roadmap would: a) cut U.S. CO2 emissions in half by 2035; b) provide families of four 2,000 a year; c) reduce unnecessary regulations; d) pay for itself; e) drive growth and innovation; and f) compel other countries to follow. "First Solar is uniquely positioned as a leader in the world's sustainable energy future. Our commitment to enabling national energy grids, corporate procurement groups and local communities worldwide to incorporate clean, renewable energy is squarely aligned with the Climate Leadership Council's mission. We see this effort as a crucial forum for informed advocacy of realistic climate protection solutions that make sense for global environmental and economic interests." — Mark Widmar, Chief Executive Officer

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 3

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Europe

☑ Other trade association in Europe, please specify **:**US Chamber of Commerce

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

The American Chamber of Commerce to the EU is the voice of American companies invested in Europe. It is a horizontal association, regrouping companies of all sectors, but very effective at making the voice of American FDI heard in Brussels. It has over 150 company members, and its policy work is organized in committees on specific policy areas. AmCham EU has always advocated for a stable and predictable framework for investments to tackle climate change. The U.S. Chamber of Commerce has asserted that the climate is changing, humans are contributing to these changes, and that inaction is not an option. The Chamber welcomed President Biden's action to rejoin the Paris Climate Agreement. In AmCham EU's view, the Paris Agreement provides clear goals, as well as a balanced and cost-efficient approach to reduce emissions. AmCham EU is committed to sustainable growth and believes the fight against climate change will bring about long-term value creation in the US and EU. Amcham EU also believes U.S.-EU cooperation will be fundamental to ensuring the success of the climate and energy transitions underway.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 6

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Europe

☑ SolarPower Europe

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

SolarPower Europe (SPE) aims to shape the regulatory environment and enhance business opportunities for solar power in Europe. SolarPower Europe supports policies that advance an energy system based on renewable energy and energy efficiency to remain below a 2C temperature increase. We work on raising awareness about the importance of robust carbon footprint methodologies (such as those specified in the EPEAT ecolabel) to help drive down the embodied carbon of solar modules and achieve faster and greater decarbonization.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 7

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Global

☑ Other global trade association, please specify :International Thin Film Solar Industry Association PVThin a.i.s.b.l

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

PVthin is an international, not-for-profit coalition representing global leaders in the thin-film solar industry. Its objective is to strengthen global energy security and support the transition to a low carbon economy by promoting the social, economic and environmental benefits of thin-film solar photovoltaic technologies. The activities of the coalition currently focus on: • Advocating thin film PV as a solution for energy security, climate change and water scarcity • Promoting policies that reward sustainable business practices such as resource efficiency and advanced closed-loop recycling schemes • Sharing and promoting best practices in environment, health and safety management • Advancing a recycling standard for PV modules under the EU WEEE Directive • Participating in the development of the European Commission's Product Environmental Footprint Category Rules for PV electricity generation • Supporting the development of regulatory measures in the

context of Eco-Design and Energy Labelling Advocacy on raw materials and resource policy discussions. As a Board Member of the Association, First Solar supports and drives the engagement of the Association in relevant policy discussions related to solar energy.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 8

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Europe

☑ Other trade association in Europe, please specify **:**European Solar Manufacturing Council

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

The European Solar Manufacturing Council (ESMC) aims at promoting and supporting the PV manufacturing industry and its value chains at the European level, by creating a supportive political environment. We support the ESMC's call to the EU for strict regulation against forced labor in the solar supply chain as well as strong carbon footprint methodologies in NZIA and Ecodesign to prevent greenwashing. We are committed to driving down the carbon footprint of our products and consistently advocate for strong PV carbon footprint methodologies (like those described in the EPEAT ecolabel's ultra-low carbon solar criteria) which minimize the potential for greenwashing. Our position is aligned with the goals of the Paris Agreement.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

[Add row]

(4.12) Have you published information about your organization's response to environmental issues for this reporting year in places other than your CDP response?

Select from:

☑ Yes

(4.12.1) Provide details on the information published about your organization's response to environmental issues for this reporting year in places other than your CDP response. Please attach the publication.

Row 1

(4.12.1.1) Publication

Select from:

☑ In voluntary sustainability reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

☑ Biodiversity

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Strategy
☑ Governance
☑ Emission targets
☑ Emissions figures
☑ Risks & Opportunities
☑ Content of environmental policies
☑ Value chain engagement
☑ Dependencies & Impacts
☑ Public policy engagement
☑ Water accounting figures
☑ Water pollution indicators

(4.12.1.6) Page/section reference

Entire report

(4.12.1.7) Attach the relevant publication

FirstSolar_Sustainability-Report_2024.pdf

(4.12.1.8) Comment

Our 2024 Sustainability Report was released in September 2024 and highlights 25 years of First Solar's unwavering commitment to Responsible Solar- from the health and environmental benefits of achieving greater avoided emissions through our ultra-low-carbon solar technology; to the economic and social value of vertically integrated responsible solar manufacturing operations and a tightly controlled supply chain; to our longstanding leadership in PV recycling and commitment to human rights, transparency, and credible third-party validation.

Row 2

(4.12.1.1) Publication

Select from:

☑ In mainstream reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Strategy

☑ Governance

☑ Emission targets

☑ Risks & Opportunities

☑ Value chain engagement

☑ Dependencies & Impacts

☑ Public policy engagement

(4.12.1.6) Page/section reference

Governance: Page 15 - 17 Public Policy Engagement: Introduction of Report Dependencies & Impacts: Page 5 -6 Risk & Opportunities: Page 36, 37-38 Strategy: Page 3 - 6 Value Chain Engagement: Page 5-6, 11, Emission Targets: Page 36

(4.12.1.7) Attach the relevant publication

first-solar-web-pdf-2023-annual-report.pdf

(4.12.1.8) Comment

First Solar's Annual Report provides a comprehensive overview of the company's financial performance, operational achievements, and strategic direction for the year. It includes detailed information on revenues, net sales, and production capacity, along with updates on significant investments, such as manufacturing expansions and technological advancements. The report also highlights First Solar's commitment to sustainability, covering topics like energy efficiency, water conservation, and environmental impact reduction. Additionally, it features insights into market trends, risk factors, and the company's approach to navigating regulatory landscapes and global energy demands

[Add row]

C5. Business strategy

(5.1) Does your organization use scenario analysis to identify environmental outcomes?

Climate change

(5.1.1) Use of scenario analysis

Select from:
☑ Yes

(5.1.2) Frequency of analysis

Select from:
☑ Every three years or less frequently

Water

(5.1.1) Use of scenario analysis

Select from:
☑ Yes

(5.1.2) Frequency of analysis

Select from:
☑ Annually
[Fixed row]

(5.1.1) Provide details of the scenarios used in your organization's scenario analysis.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 2.6

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ SSP1

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.5°C or lower

(5.1.1.7) Reference year

2021

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature

☑ Number of ecosystems impacted

☑ Changes in ecosystem services provision

☑ Speed of change (to state of nature and/or ecosystem services)

☑ Climate change (one of five drivers of nature change)

Finance and insurance

☑ Cost of capital

☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Consumer attention to impact

☑ Impact of nature footprint on reputation

Regulators, legal and policy regimes

☑ Global regulation

☑ Level of action (from local to global)

☑ Global targets

☑ Methodologies and expectations for science-based targets

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

☑ Data regime (from closed to open)

Direct interaction with climate

☑ On asset values, on the corporate

☑ Perception of efficacy of climate regime

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

RCP 2.6 presents an optimistic pathway to limiting global warming to 1.5-2C, but it is based on numerous assumptions, such as the rapid deployment of mitigation technologies and global political will. There are significant uncertainties and constraints, particularly around the feasibility of negative emissions, the timeline for technological advancements, and the political and economic realities of achieving such deep emissions cuts.

(5.1.1.11) Rationale for choice of scenario

For physical risks, we used the IPCC's assessment of 1.5C global warming (consistent with RCP 2.6) to conduct a quantitative analysis of potential impacts on our manufacturing, recycling, R&D, and testing facilities over the 2030-2050 time horizon. These time frames are relevant to our organization since First Solar has set a target to purchase all electricity from renewables by 2028 and committed to science-based climate targets, aiming to reduce Scope 1 and Scope 2 emissions by 34% by 2028 and achieve Net Zero by 2050, in line with a 1.5C world. We leveraged the Shared Socioeconomic Pathway (SSP) scenarios, including SSP1-2.6 (low emissions), SSP2-4.5 (intermediate emissions), and SSP5-8.5 (very high emissions), to cover a broad range of emissions pathways in assessing physical risks at our facilities in the U.S., Malaysia, Vietnam, and India. Relative to other pathways, SSP1 envisions a world with high income, reduced inequalities, and the widespread adoption of environmentally friendly technologies. It presents low challenges to both mitigation and adaptation, which would likely drive increased demand for low-carbon solar products in the near term.

Water

(5.1.1.1) Scenario used

Water scenarios

☑ WWF Water Risk Filter

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Facility

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.7) Reference year

2023

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2030

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature

☑ Number of ecosystems impacted

☑ Changes in ecosystem services provision

☑ Speed of change (to state of nature and/or ecosystem services)

☑ Other local ecosystem asset interactions, dependencies and impacts driving forces, please specify **:**Water Risk

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

At First Solar, we understand the critical role of managing water-related risks as part of our sustainability and climate commitments. To assess these risks, we use tools like the WWF Water Risk Filter. However, while this tool provides valuable insights, it operates on certain assumptions that do not fully capture the specifics of our water-efficient manufacturing processes. For instance, it assumes typical water use patterns across industries, which may not reflect our advanced practices, such as water recycling, closed-loop systems, and efforts to minimize water consumption in the production of our thin-film solar modules. Additionally, the tool assesses local water risks for each site, but it doesn't account for our comprehensive global water management strategies or innovations designed to mitigate water stress across regions. There are also inherent uncertainties in the Water Risk Filter's predictions, particularly around climate variability and future changes in water regulations. These unpredictable factors can vary widely across the regions where we operate, making it difficult to assess their precise long-term impacts on our business. Furthermore, because the tool is designed for broad industry use, it may not fully capture the specific risks faced by solar panel manufacturers, especially as we lead in technological innovation with our thin-film and tandem PV modules. In terms of constraints, the Water Risk Filter relies on publicly available data and generalized models, which may not provide the granularity required to assess our water risks accurately. The data used may not fully reflect the water-saving technologies we've implemented or the innovative measures we've taken to manage water consumption responsibly. Additionally, the tool may not address the full scope of geopolitical and regulatory risks that can affect water availability and quality in the diverse locations where we operate.

(5.1.1.11) Rationale for choice of scenario

To evaluate water risks, we used the WWF Water Risk Filter tool to assess risks under three climate scenarios: optimistic (1.5C), current trend (2C), and pessimistic warming scenarios (3.5C or higher) for 2030 and 2050. This analysis was conducted across our manufacturing, recycling, and research and development facilities, including our new manufacturing location in India. The optimistic scenario represents a world with sustainable socio-economic development (SSP1) and moderate reductions in GHG emissions (RCP2.6/RCP4.5), leading to a global mean surface temperature increase of approximately 1.5C by 2100. It assumes moderate mitigation measures, halving GHG emissions by 2050, more stringent environmental regulations, rapid technological advancements, and improved resource efficiency. The current trend scenario reflects a world similar to present socio-economic development trends (SSP2) with intermediate GHG emission levels (RCP4.5/RCP6.0), leading to a temperature increase of approximately 2C by 2100. It assumes intermediate mitigation measures with GHG emissions peaking by 2050, weak environmental regulations, and slow technological progress in water use efficiency. Additionally, a growing population and increased resource demand exacerbate the degradation of water resources. The pessimistic scenario represents a world with unequal and unstable socio-economic development (SSP3) and high GHG emission levels (RCP6.0/RCP8.5), resulting in a temperature rise of 3.5C to 4C by 2100. This scenario assumes GHG emissions continue to rise, weak environmental regulations impede technological progress in water efficiency, and a growing population with limited access to safe water further strains water resources.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 4.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ SSP2

(5.1.1.3) Approach to scenario

Select from:

☑ Quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 2.5ºC - 2.9ºC

(5.1.1.7) Reference year

2021

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature

☑ Speed of change (to state of nature and/or ecosystem services)

☑ Climate change (one of five drivers of nature change)

Finance and insurance

☑ Cost of capital

☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Consumer attention to impact

☑ Impact of nature footprint on reputation

Regulators, legal and policy regimes

☑ Global regulation

☑ Level of action (from local to global)

☑ Global targets

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

☑ Data regime (from closed to open)

Direct interaction with climate

☑ On asset values, on the corporate

☑ Perception of efficacy of climate regime

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

RCP 4.5 assumes moderate mitigation, with a mix of fossil fuel and renewable energy use, gradual emissions reductions, and steady economic growth. Uncertainties include the effectiveness of technological advancements and climate policies, while constraints include political, economic, and infrastructural barriers that may prevent more rapid emissions reductions. The scenario is characterized by a balanced but not aggressive approach to stabilizing global temperature increases.

(5.1.1.11) Rationale for choice of scenario

For physical risks, we used the IPCC's assessment of 2C global warming (consistent with RCP 4.5) to conduct a quantitative analysis of potential impacts on our manufacturing, recycling, R&D, and testing facilities over a 2030-2050 time horizon. These timeframes are relevant to our organization, as First Solar has set a target to purchase all electricity from renewables by 2028 and has committed to science-based climate targets to reduce Scope 1 and Scope 2 emissions by 34% by 2028, and to achieve Net Zero by 2050, in line with a 1.5C world. We leveraged the Shared Socioeconomic Pathway scenarios, including SSP1-2.6 (low emissions), SSP2-4.5 (intermediate emissions), and SSP5-8.5 (very high emissions), to cover a broad range of emissions pathways to assess physical risks at our facilities in the U.S., Malaysia, Vietnam, and our new manufacturing facility under construction in India. Relative to other pathways, SSP2 has medium income and technological progress, with medium challenges to mitigation and adaptation. In this scenario, demand for solar increases, though not as rapidly or extensively as in the SSP1 scenario.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 8.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ SSP5

(5.1.1.3) Approach to scenario

Select from:

☑ Quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 4.0°C and above

(5.1.1.7) Reference year

2021

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature

☑ Number of ecosystems impacted

☑ Changes in ecosystem services provision

☑ Climate change (one of five drivers of nature change)

Finance and insurance

☑ Cost of capital

☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Impact of nature footprint on reputation

☑ Sensitivity to inequity of nature impacts

Regulators, legal and policy regimes

☑ Global regulation

☑ Level of action (from local to global)

☑ Global targets

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

☑ Data regime (from closed to open)

Direct interaction with climate

☑ On asset values, on the corporate

☑ Perception of efficacy of climate regime

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

In RCP 8.5, the key assumptions include continued reliance on fossil fuels, minimal technological breakthroughs in clean energy, weak global climate policies, high population growth, and ongoing economic expansion with increasing energy demand. Uncertainties revolve around the potential for technological innovations, political and societal shifts toward stronger climate action, unpredictable climate feedback loops, economic disruptions, and the varying capacity of countries to adapt to climate impacts. The scenario is constrained by the inertia of existing fossil fuel infrastructure, political and economic resistance to climate action, population pressures in developing regions, and the lack of international cooperation, which together limit the ability to transition to a low-carbon economy and effectively mitigate climate change.

(5.1.1.11) Rationale for choice of scenario

For physical risks, we used the IPCC's assessment of 3C or higher global warming (consistent with RCP 8.5) to conduct a quantitative analysis of potential impacts on our manufacturing, recycling, R&D, and testing facilities over a 2030-2050 time horizon. These timeframes are relevant to our organization, as First Solar has set a target to purchase all electricity from renewables by 2028 and has committed to science-based climate targets to reduce Scope 1 and Scope 2 emissions by 34% by 2028 and to achieve Net Zero by 2050, in line with a 1.5C world. We leveraged the Shared Socioeconomic Pathway scenarios, including SSP1-2.6 (low emissions), SSP2-4.5 (intermediate emissions), and SSP5-8.5 (very high emissions), to cover a broad range of emissions pathways to assess physical risks at our facilities in the U.S., Malaysia, Vietnam, and our new manufacturing facility under construction in India. In an RCP 8.5 scenario, climate mitigation policies and air quality legislation are absent. SSP5 includes high income, reduced inequalities, free trade, and resource-intensive production with high challenges to mitigation. These scenarios would increase demand for fossil-fueled development and decrease demand for our low-carbon solar products in the near term. Solar demand would only start to increase after 2050.

Climate change

(5.1.1.1) Scenario used

Climate transition scenarios

☑ IEA NZE 2050

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Policy

☑ Market

☑ Technology

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.5°C or lower

(5.1.1.7) Reference year

2021

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Finance and insurance

☑ Cost of capital

☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Impact of nature footprint on reputation

Regulators, legal and policy regimes

☑ Global regulation

☑ Level of action (from local to global)

☑ Global targets

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

☑ Data regime (from closed to open)

Direct interaction with climate

☑ On asset values, on the corporate

☑ Perception of efficacy of climate regime

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

The key assumptions are an increase in solar demand, continuous technological advancements, and supportive global policies. Uncertainties include the pace of technological breakthroughs, policy consistency, and market dynamics, particularly related to competition and raw material supply. The constraints revolve around capital investment, supply chain vulnerabilities, manufacturing infrastructure, and the global speed of the energy transition.

(5.1.1.11) Rationale for choice of scenario

For transition risks, we used evaluations by IEA and Princeton University of net zero pathways by 2050, globally and for the U.S. respectively, to assess potential climate-related risks and opportunities to our company.
[Add row]

(5.1.2) Provide details of the outcomes of your organization's scenario analysis.

Climate change

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management

☑ Strategy and financial planning

☑ Resilience of business model and strategy

☑ Capacity building

☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:

☑ Organization-wide

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

We leveraged a broad range of emissions pathways in our scenarios to assess potential climate-related risks and opportunities in an uncertain future. We evaluated possible projections under 1.5C, 2C, and 3C or higher warming scenarios. Physical risks include: 1. Damage to our facilities or slowdowns caused by flooding, both chronic and acute. 2. Disruptions to supply chains and logistics caused by increased frequency or intensity of weather events, including both acute incidents and chronic changes in weather patterns. 3. Threats to the availability and quality of water, which is necessary for our operations. 4. Threats to human health arising from the effects of climate change, including air quality issues, extreme heat, water-borne illnesses, and other health risks. 5. Atmosphere-Solar Interactions: Climate change impacts that affect the functionality of our solar products. Even in the optimistic 1.5C warming scenario, we expect to see impacts from weather changes similar in intensity to what we experience now, over the coming decades, with increased storms, heat, drought, wildfires, and similar events. Under a 2C warming scenario, we anticipate greater storm intensity and more frequent extreme heat by 2030. These risks roughly double by 2060. In a 3C or higher warming scenario, we expect physical climate risks to have significant impacts. We anticipate storms near 2030 to be worse than those expected under a 2C scenario in 2060. This risk roughly doubles by 2060. Extreme heat is expected to be slightly worse under a 3C warming scenario than under a 2C scenario throughout the coming decades, particularly in areas near First Solar's U.S. operations. As a result of the scenario analysis, we have aligned our near-term and long-term science-based targets with keeping global temperatures to 1.5C. Transition risks and opportunities include: 1. Increased demand for our low-carbon products to meet global net-zero carbon emissions goals and reduce the adverse effects of climate change. 2. Increased demand for our Responsible Solar offering to ensure a sustainable and equitable clean energy transition, rejecting solar modules made with forced labor and in carbon-intensive grids such as those in China. 3. Reduced demand for products due to risks arising from inflexible or under-capacity grid infrastructure. As a result of the transition scenario analysis, we continue to view our approach to Responsible Solar as a competitive differentiator.

Water

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management

☑ Strategy and financial planning

☑ Resilience of business model and strategy

☑ Capacity building

☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:

☑ Facility

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

Water considerations have influenced the strategy for our new manufacturing operations in India. To minimize impacts on local water resources, we are designing a Net Zero Water Withdrawal PV manufacturing facility that will rely entirely on tertiary-treated reverse osmosis water from the city's sewage treatment plant, with zero wastewater discharge. Instead of being discharged, the wastewater will be treated onsite and converted into freshwater for reuse in our operations. In addition to maximizing alternative water usage—i.e., water that is not derived from fresh surface water or groundwater sources—we are also driving continuous improvement in water conservation through internal monitoring, benchmarking, and optimization of our process tool designs
[Fixed row]

(5.2) Does your organization’s strategy include a climate transition plan?

(5.2.1) Transition plan

Select from:

☑ Yes, we have a climate transition plan which aligns with a 1.5°C world

(5.2.3) Publicly available climate transition plan

Select from:

☑ Yes

(5.2.4) Plan explicitly commits to cease all spending on, and revenue generation from, activities that contribute to fossil fuel expansion

Select from:

☑ Yes

(5.2.5) Description of activities included in commitment and implementation of commitment

We have set science-based targets to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028 and achieve Net-Zero GHG emissions by 2050, relative to 2020. Our near-term science-based emissions reduction target and net-zero target are in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. As scope 3 value chain emissions account for more than 80% of our total emissions, we set a target to reduce our scope 3 GHG emissions intensity from purchased goods and services by 45% per MW produced by 2028, relative to 2020. By 2050, we aim to reduce our scope 3 GHG emissions from purchased goods and services, capital goods, and fuel- and energy-related activities by 97% per MW produced, relative to 2020. In 2023, First Solar became the first of the world's largest solar manufacturers to have our net-zero target validated by the Science Based Targets initiative (SBTi) In addition, we joined RE100 in 2020 and set an ambitious target to achieve 100% renewable energy across our global operations by 2028. As part of our renewable energy strategy, we are investigating opportunities to procure offsite renewable electricity, install PV rooftop and carport arrays, and purchase bundled renewable energy credits (RECs). The residual 5% scope 1 emissions can be neutralized with high quality carbon offsets to get to net-zero, in accordance with the SBTi's NetZero Standards. We have installed onsite PV installations at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, which generated approximately 7.5 million kWh of solar electricity globally. We installed a 300kW PV carport array which began operating in 2023 at our second manufacturing facility in Ohio, and have installed carports at our facilities in Vietnam and Malaysia. In 2024, we secured a 15-year power purchase agreement with Cleantech Solar to cover approximately 70% of our power needs in India.

(5.2.7) Mechanism by which feedback is collected from shareholders on your climate transition plan

Select from:

☑ We have a different feedback mechanism in place

(5.2.8) Description of feedback mechanism

We have regular ESG calls with investors which enables us to collect their feedback on our GHG emissions reduction targets, climate transition plan, and other ESG initiatives and topics. Our climate transition plan is included in our 2023 sustainability report available on our website.

(5.2.9) Frequency of feedback collection

Select from:

☑ More frequently than annually

(5.2.10) Description of key assumptions and dependencies on which the transition plan relies

At First Solar, our transition plan is built on key assumptions and dependencies that reflect the dynamic and evolving nature of the global energy landscape. We assume that the demand for renewable energy will continue to grow, driven by increasing market adoption and stronger regulatory frameworks aimed at addressing climate change. Government policies, such as the U.S. Inflation Reduction Act and the European Union's Green Deal, are critical in incentivizing clean energy technologies and creating favorable conditions for the solar industry to thrive. Additionally, we rely on continued advancements in solar technology, such as our Series 7 modules, which have the lowest carbon and water footprint in the industry, to enhance the efficiency and sustainability of solar power generation. Our transition also depends on a robust and resilient supply chain, ensuring that key materials like cadmium telluride (CdTe) remain available and responsibly sourced.

Collaboration with stakeholders, including governments, suppliers, and customers, is essential to achieving our goals, as is the modernization of energy infrastructure to accommodate increased solar integration. We are resourcing this transition through significant financial investments in manufacturing expansion and R&D, including the development of new facilities in the U.S. and India. Our commitment to workforce development will support the creation of thousands of high-quality jobs, while our partnerships with suppliers and governments ensure that we have the resources to succeed. Through these efforts, we are positioning First Solar to lead the global transition to sustainable energy.

(5.2.11) Description of progress against transition plan disclosed in current or previous reporting period

At First Solar, we are proud to report significant progress in implementing our transition plan, as outlined in previous reporting periods. In 2023, we achieved a 33% increase in production, reaching 12.1 GW of solar modules, reflecting the growing demand for our sustainable products. This expansion included the commencement of production at our third U.S. facility and our first in India, increasing our global nameplate capacity to approximately 16.6 GW. Our commitment to powering our U.S. operations with 100% renewable energy by 2026, and our global operations by 2028, is on track with a 15-year power purchase agreement in India, covering 70% of our energy needs there. Our Series 7 modules, which have the industry's lowest carbon and water footprint, continue to play a pivotal role in our sustainability strategy. These modules now represent a significant portion of our production capacity. Additionally, our recycling facilities have maintained a 95% material recovery rate, contributing to our goal of a circular solar economy. We remain focused on reducing our carbon footprint, with a target to reduce absolute Scope 1 and 2 emissions by 34% by 2028. Although we experienced a 57% increase in these emissions due to our production expansion, we have implemented strategies such as energy efficiency measures and renewable energy adoption to mitigate this impact. Our water conservation efforts also showed progress, with a 48% reduction in manufacturing water intensity since 2020.

(5.2.12) Attach any relevant documents which detail your climate transition plan (optional)

FirstSolar_Sustainability-Report_2024.pdf

(5.2.13) Other environmental issues that your climate transition plan considers

Select all that apply

☑ Water

☑ Biodiversity

☑ Other, please specify **:**Waste

(5.2.14) Explain how the other environmental issues are considered in your climate transition plan

In addition to addressing climate change, First Solar's climate transition plan integrates efforts to tackle other critical environmental issues. A key focus is on water conservation, particularly in water-scarce regions. Our operations have implemented innovative strategies to reduce water usage and recycle water wherever possible. In 2023, we recycled 318 million liters of water—an 88% increase over 2022. This is particularly important in regions like India, where we aim to mitigate the impacts of water scarcity through advanced recycling and reuse technologies. Furthermore, we are committed to protecting biodiversity. While our manufacturing facilities are not located near biodiversity-sensitive areas, we actively engage in biodiversity protection initiatives. In India, we planted 12,000 saplings around our

manufacturing facilities in 2024 to develop green beds that support local ecosystems. Similarly, our team in Vietnam planted 250 indigenous mangrove trees in the Can Gio Biosphere Reserve to combat climate-related flooding risks. First Solar is also advancing waste management practices. Our commitment to a circular economy is evident in our industry-leading recycling capabilities, with a global module material recovery rate of 95%. This includes recycling glass, metals, and semiconductor materials from end-of-life modules to ensure minimal waste from our production processes
[Fixed row]

(5.3) Have environmental risks and opportunities affected your strategy and/or financial planning?

(5.3.1) Environmental risks and/or opportunities have affected your strategy and/or financial planning

Select from:
☑ Yes, both strategy and financial planning

(5.3.2) Business areas where environmental risks and/or opportunities have affected your strategy

Select all that apply
☑ Products and services
☑ Upstream/downstream value chain
☑ Investment in R&D
☑ Operations
[Fixed row]

(5.3.1) Describe where and how environmental risks and opportunities have affected your strategy.

Products and services

(5.3.1.1) Effect type

Select all that apply
☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Climate-related opportunities have influenced our product strategy with a time horizon of present day through 2050. As more companies and governments set net zero targets to limit global temperatures to 1.5 degrees C, there is a growing awareness that not all solar technologies are created equal. How and where solar modules and their components are manufactured determines how many greenhouse gas emissions they will be able to avoid and displace. For example, our thin film CdTe solar modules manufactured in the U.S. have a carbon footprint that is up to 4 times lower than conventional crystalline silicon modules manufactured in China. The adoption of environmental performance criteria in tender schemes, such as the French carbon footprint criteria, is creating a market pull for low-carbon PV products. By increasing the efficiency of our modules and manufacturing process, we have successfully reduced our product carbon footprint which has directly translated into business opportunities in France as well as with corporate renewable energy buyers. Our climate scenario analysis further confirmed that pursuing the development of low-carbon solar will help increase demand for our products to ensure a sustainable and equitable transition. The product carbon footprint of our Series 7 modules is up to 22% lower than our Series 6 modules and up to 30% lower than our Series 4 modules. We aim to reduce the carbon footprint of our ultra-low-carbon solar panels by more than 65% by 2028 through climate mitigation strategies such as going 100% renewable and engaging with key suppliers to minimize the embodied carbon of our module components. As a leading American solar technology company and global provider of responsibly-produced eco-efficient solar modules advancing the fight against climate change, First Solar's derives 100% of its revenues from clean energy products.

Upstream/downstream value chain

(5.3.1.1) Effect type

Select all that apply

☑ Risks

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Climate-related risks such as natural disasters that disrupt the utility and raw material supply to our manufacturing facilities influence our supply chain management strategy with a time horizon of present day through 2030. Disruptions to our supply chain and logistics caused by increased frequency or intensity of weather, both acute events, and chronic changes in weather patterns were confirmed in our climate scenario analysis. The most substantial decision to date has been enabling suppliers that are near to our manufacturing locations, thereby reducing the transportation costs, environmental footprint, lead times and potential logistics disruptions for such materials. Climate-related opportunities are starting to influence our supply chain. We began engaging with key suppliers to assess their ability to increase

the recycled content of the materials we use in our products which would help reduce the carbon footprint of our products. The most substantial decision to date has been establishing a project roadmap to reduce the life cycle environmental impacts of our supply chain (scope 3) by 2030. The opportunity of decreasing the embodied carbon of our solar products was confirmed by our climate scenario analysis.

Investment in R&D

(5.3.1.1) Effect type

Select all that apply

☑ Risks

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Our R&D investments are driven by climate-related risks which impact the functionality of our products as well as climate-related opportunities which create demand for our solar modules. Long-term changes in weather patterns can also affect the functionality of our products. The time horizon is over 30 years, which corresponds to the lifetime of our products The energy yield of our products are a function of atmospheric variables such as solar irradiation, temperature, humidity, and soiling. First Solar designs products to be resilient to atmospheric-solar interactions by minimizing the PV module's temperature coefficient and utilizing an optimal band-gap semiconductor that is less sensitive to infrared light absorption by humidity than our competitors. Our products go through extended reliability testing to evaluate long-term durability in extremes of temperature, wind, irradiation, humidity and precipitation. First Solar modules are the only PV module in the industry warranted against cell cracking and micro-cracking, which can be caused by excessive thermal and mechanical stress. First Solar modules have also consistently ranked as "Top Performer" in PVEL's reliability scorecard which evaluates long-term durability and performance. We continue to devote substantial resources to continually improving the wattage and energy yield of our solar modules. Improvements in PV solar module efficiency drive reductions in the costs of PV solar thereby expanding PV markets and displacing electricity generated by fossil fuels. We also focus our R&D activities on continuously improving module durability and manufacturing efficiencies, including throughput improvement, volume ramp, and material cost reduction. Based on publicly available information, we are one of the leaders in R&D investment among PV solar module manufacturers, maintaining a rate of innovation that enables rapid wattage gains and cost reductions. Climate change impacts that affect product functionality were informed by our climate scenario analysis.

Operations

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Climate-related risks and opportunities influence our manufacturing operations strategy in the near-, medium- and long-term. Climate mitigation strategies drive demand for our products our climate scenario confirmed growth opportunities in high climate mitigation scenarios such as RCP 2.6. As a result of the growing demand for our solar products, our annual manufacturing capacity has grown from 1.5 megawatts (MW) in 2002 to 16.6 gigawatts (GW) as of Dec. 31, 2023. The most substantial decision in 2021 was setting the foundation to reach approximately 16 GW of capacity in 2024 with the announced plans for new factories in Ohio and India to produce our next generation of solar panels, which we are calling Series 7. The two Series 7 factories are expected to come online in 2023. We assess climate-related risks such as flooding and natural disasters which have the potential to affect our manufacturing operations. We mitigate such risks by distributing our manufacturing capability across several sites. Stable access to electricity and water are also taken into account when siting new manufacturing facilities. As part of our own mitigation strategy, we committed to being powered by 100% renewable electricity by 2028 and are considering renewable energy access into consideration for our new manufacturing sites. First Solar implements energy efficiency and low carbon initiatives as part of our standard manufacturing system design. We have installed onsite PV installations at our production sites in Ohio and Malaysia and at our recycling facility in Frankfurt Oder, Germany. In November 2023, First Solar entered into a power purchase agreement with Cleantech Solar, a leading provider of renewable energy solutions in India and Southeast Asia. Under the agreement, Cleantech plans to construct certain PV solar (150 MWdc) and wind (16.8 MW) generating assets, which are expected to supply electricity to our manufacturing facility in India starting in Q4 2024. We have set science-based targets to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028 and achieve net zero emissions by 2050, relative to 2020. These targets are in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. We aim to achieve this by increasing our energy efficiency, going 100% renewable across our U.S. operations by 2026, enabling the offsite solar market in Malaysia and Vietnam, and purchasing bundled RECs and offsets as a last resort.

[Add row]

(5.3.2) Describe where and how environmental risks and opportunities have affected your financial planning.

Row 1

(5.3.2.1) Financial planning elements that have been affected

Select all that apply

☑ Assets
☑ Revenues
☑ Direct costs
☑ Indirect costs
☑ Access to capital
☑ Capital expenditures

(5.3.2.2) Effect type

Select all that apply
☑ Risks
☑ Opportunities

(5.3.2.3) Environmental issues relevant to the risks and/or opportunities that have affected these financial planning elements

Select all that apply
☑ Climate change

(5.3.2.4) Describe how environmental risks and/or opportunities have affected these financial planning elements

Both climate change risks and opportunities have influenced our financial planning. We are focused on minimizing risks for our factory locations and supply chain as it relates to the dollars that we are putting to work in manufacturing capex. Increases in the cost of electricity to power our manufacturing facilities (direct costs) or impacts to our supply chain which increase the cost of raw materials (indirect costs) can be impacted by climate change. As part of our own mitigation strategy we committed to being powered by 100% renewable electricity by 2028. As climate risks worsen, this increases awareness on the speed in which climate initiatives need to be implemented and in turn increases the overall demand for low carbon solar. The growing demand for renewable energy and our low carbon solar products directly influences our revenues. We continue to see strong demand for our solar products driven by climate mitigation strategies. We began 2024 with a total contracted backlog of 78.3 GW with an aggregate value of 23.3 billion, or approximately 29.8 cents per watt. In comparison, we began 2023 with a contracted backlog totaling 61.4 GW with an aggregate value of 17.7 billion, or approximately 28.8 cents per watt. Net sales for 2023 increased by 27% to 3.3 billion compared to 2.6 billion in 2022. To meet this growing demand, we are expanding our manufacturing operations (capital expenditures) over the next two years.
[Add row]

(5.4) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

	Identification of spending/revenue that is aligned with your organization's climate transition	Methodology or framework used to assess alignment with your organization's climate transition	Indicate the level at which you identify the alignment of your spending/revenue with a sustainable finance taxonomy
	Select from: ☑ Yes	*Select all that apply* ☑ A sustainable finance taxonomy	*Select from:* ☑ At the organization level only

[Fixed row]

(5.4.1) Quantify the amount and percentage share of your spending/revenue that is aligned with your organization's climate transition.

Row 1

(5.4.1.1) Methodology or framework used to assess alignment

Select from:

☑ A sustainable finance taxonomy

(5.4.1.2) Taxonomy under which information is being reported

Select from:

☑ EU Taxonomy for Sustainable Activities

(5.4.1.3) Objective under which alignment is being reported

Select from:

☑ Total across climate change mitigation and climate change adaption

(5.4.1.4) Indicate whether you are reporting eligibility information for the selected objective

Select from:

☑ Yes

(5.4.1.5) Financial metric

Select from:

☑ Revenue/Turnover

(5.4.1.6) Amount of selected financial metric that is aligned in the reporting year (currency)

3318602000

(5.4.1.7) Percentage share of selected financial metric aligned in the reporting year (%)

100

(5.4.1.8) Percentage share of selected financial metric planned to align in 2025 (%)

100

(5.4.1.9) Percentage share of selected financial metric planned to align in 2030 (%)

100

(5.4.1.10) Percentage share of financial metric that is taxonomy-eligible in the reporting year (%)

100

(5.4.1.11) Percentage share of financial metric that is taxonomy non-eligible in the reporting year (%)

0

(5.4.1.12) Details of the methodology or framework used to assess alignment with your organization's climate transition

First Solar is a leading American solar technology company and global provider of responsibly-produced eco-efficient solar modules advancing the fight against climate change. Our primary segment is our modules business, which involves the design, manufacture, and sale of CdTe solar modules, which convert sunlight into electricity. This aligns with the EU Taxonomy activity of: Manufacture of renewable energy technologies. In 2023, net sales from our modules business amounted to 3,296,809,000, compared to 2,428,278,000 in 2022. Our residual business operations include certain project development activities, O&M services, the results of operations from PV solar power systems we owned and operated in certain international regions, and the sale of such systems to third-party customers. This aligns

with the EU Taxonomy activity of: Electricity generation using solar photovoltaic technology (Construction or operation of electricity generation facilities that produce electricity using solar photovoltaic (PV) technology). In 2023, revenue from our residual business operations amounted to 21,793. The total for amount for 2023 is 3,318,602,000
[Add row]

(5.4.3) Provide any additional contextual and/or verification/assurance information relevant to your organization's taxonomy alignment.

(5.4.3.2) Additional contextual information relevant to your taxonomy accounting

Financial information is based on data reported in our 2023 Annual Report. For more information on the environmental benefits of our products and their alignment with the EU Taxonomy, please refer to our sustainability report.

(5.4.3.3) Indicate whether you will be providing verification/assurance information relevant to your taxonomy alignment in question 13.1

Select from:
☑ No

(5.4.3.4) Please explain why you will not be providing verification/assurance information relevant to your taxonomy alignment in question 13.1

First Solar is a leading American solar technology company and global provider of responsibly produced eco-efficient solar modules advancing the fight against climate change. We derive 100% of our revenues from clean energy products.
[Fixed row]

(5.5) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

(5.5.1) Investment in low-carbon R&D

Select from:

☑ Yes

(5.5.2) Comment

Over 99% of our revenue is derived from the sale of low carbon products (thin film PV modules). Our Research and development investment is directly contributing to the same.
[Fixed row]

(5.5.2) Provide details of your organization's investments in low-carbon R&D for capital goods products and services over the last three years.

Row 1

(5.5.2.1) Technology area

Select from:

☑ Renewable energy

(5.5.2.2) Stage of development in the reporting year

Select from:

☑ Large scale commercial deployment

(5.5.2.3) Average % of total R&D investment over the last 3 years

100

(5.5.2.4) R&D investment figure in the reporting year (unit currency as selected in 1.2) (optional)

152307000

(5.5.2.5) Average % of total R&D investment planned over the next 5 years

100

(5.5.2.6) Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan

First Solar's investment in its new Ohio R&D Innovation Center is directly aligned with our climate commitments and transition plan. The center, believed to be the largest of its kind in the Western Hemisphere, is a 1.3 million square foot facility that includes a high-tech pilot manufacturing line to produce full-sized prototypes of thin film and tandem PV modules. This cutting-edge research supports the development of ultra-low carbon technologies, crucial for reducing the overall carbon footprint of solar energy production. As part of a nearly half-billion-dollar investment in R&D infrastructure, the Ohio facility also includes a dedicated perovskite development line expected to be operational by the second half of 2024. Our recent acquisition of Evolar further strengthens our expertise in thin film semiconductors, complementing our existing CadTel technology. This strategic move accelerates our pursuit of high-efficiency tandem PV modules, which, as CEO Mark Widmar stated, "will define the future" of solar technology. These R&D efforts are directly tied to our climate transition plan, focused on producing solar solutions that are both efficient and sustainably manufactured. By advancing low-carbon, responsibly produced solar modules, we are reaffirming our commitment to addressing climate change through innovation in renewable energy technologies.
[Add row]

(5.9) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

(5.9.1) Water-related CAPEX (+/- % change)

-5

(5.9.2) Anticipated forward trend for CAPEX (+/- % change)

70

(5.9.3) Water-related OPEX (+/- % change)

17

(5.9.4) Anticipated forward trend for OPEX (+/- % change)

102

(5.9.5) Please explain

The anticipated increase in water-related OPEX in 2024 is due to the ultra-pure water production and wastewater treatment systems installed at our new manufacturing plant in Alabama. The anticipated increase in our water-related OPEX in 2023 and 2024 is related to our new manufacturing plant in India which commenced operations in the second half of 2023 and our new manufacturing plant in Alabama which is commencing operations in the second half of 2024. Water-related CAPEX in 2023 remained relatively flat compared to 2022 due to ultra-pure water production and wastewater treatment systems installed at our third manufacturing facility in Ohio in 2022 and our manufacturing facility in India in 2023.
[Fixed row]

(5.10) Does your organization use an internal price on environmental externalities?

(5.10.1) Use of internal pricing of environmental externalities

Select from:

☑ No, and we do not plan to in the next two years

(5.10.3) Primary reason for not pricing environmental externalities

Select from:

☑ Not an immediate strategic priority

(5.10.4) Explain why your organization does not price environmental externalities

First Solar currently does not directly price environmental externalities within our operations. This is because our approach to sustainability already integrates the principles of environmental stewardship into every aspect of our business. Our solar technology is designed to minimize environmental impacts, such as reducing greenhouse gas emissions, water consumption, and resource use throughout the lifecycle of our products. By focusing on these intrinsic improvements, we prioritize reducing our overall environmental footprint without explicitly assigning a monetary value to these externalities. That said, we are closely monitoring global trends in carbon pricing and environmental regulations.
[Fixed row]

(5.11) Do you engage with your value chain on environmental issues?

	Engaging with this stakeholder on environmental issues	Environmental issues covered
Suppliers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Customers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Investors and shareholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Other value chain stakeholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water

[Fixed row]

(5.11.1) Does your organization assess and classify suppliers according to their dependencies and/or impacts on the environment?

Climate change

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Contribution to supplier-related Scope 3 emissions

☑ Dependence on ecosystem services/environmental assets

☑ Impact on pollution levels

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 100%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

We identify key suppliers that account for more than 50% of our product's carbon footprint to reduce life cycle impacts in our supply chain (scope 3).

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ 26-50%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

14

Water

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Basin/landscape condition

☑ Dependence on water

☑ Impact on water availability

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 100%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

As part of our annual risk assessment, we look at water-related risks based on indices relating to flood risk, water stress, wastewater management, and drinking water and sanitation. These factors are included in the overall environmental score of the risk assessment. The threshold for substantive impact on water security is a high spend supplier with a "high" or "extremely high" score on the World Resources Institute's Water Stress Index.

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ 1-25%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

26
[Fixed row]

(5.11.2) Does your organization prioritize which suppliers to engage with on environmental issues?

Climate change

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to climate change

☑ Procurement spend

☑ Strategic status of suppliers

☑ Vulnerability of suppliers

(5.11.2.4) Please explain

All new suppliers undergo a rigorous qualification process using a balanced scorecard which focuses on Quality, Cost, Flexibility, Service, Technology and Sustainability. We regularly map our supply base and conduct an annual risk assessment to identify potential high-risk suppliers. We leverage third-party tools and indices on global slavery, forced labor and other environmental, social, governance (ESG) aspects to identify high-risk suppliers based on industry, geography and spend. We are engaging with key suppliers that account for more than 50% of our product's carbon footprint to reduce life cycle impacts in our supply chain (scope 3).

Water

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to water

☑ Procurement spend

☑ Strategic status of suppliers

☑ Vulnerability of suppliers

(5.11.2.4) Please explain

All new suppliers undergo a rigorous qualification process using a balanced scorecard which focuses on Quality, Cost, Flexibility, Service, Technology and Sustainability. We regularly map our supply base and conduct an annual risk assessment to identify potential high-risk suppliers. We leverage third-party tools and indices on global slavery, forced labor and other environmental, social, governance (ESG) aspects to identify high-risk suppliers based on industry, geography and spend.
[Fixed row]

(5.11.5) Do your suppliers have to meet environmental requirements as part of your organization's purchasing process?

Climate change

(5.11.5.1) Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process

Select from:

☑ Yes, environmental requirements related to this environmental issue are included in our supplier contracts

(5.11.5.2) Policy in place for addressing supplier non-compliance

Select from:

☑ Yes, we have a policy in place for addressing non-compliance

(5.11.5.3) Comment

First Solar's supplier agreements require compliance with applicable laws and regulations in addition to First Solar requirements, which may exceed local legal requirements. Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct and require their suppliers to do the same. The RBA code of conduct includes climate-related requirements such as air emissions management, energy efficiency improvements, corporate-wide scope 1 and 2 GHG emissions reduction goal, public disclosure on progress towards the goal, water management, and efforts to minimize their energy consumption and greenhouse gas emissions.

Water

(5.11.5.1) Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process

Select from:

☑ Yes, environmental requirements related to this environmental issue are included in our supplier contracts

(5.11.5.2) Policy in place for addressing supplier non-compliance

Select from:

☑ Yes, we have a policy in place for addressing non-compliance

(5.11.5.3) Comment

First Solar's supplier agreements require compliance with applicable laws and regulations in addition to First Solar requirements, which may exceed local legal requirements. Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct and require their suppliers to do the same. The RBA code of conduct includes water-related criteria including providing workers with ready access to clean toilet facilities, potable water and sanitary food preparation, water conservation and monitoring, and wastewater management.
[Fixed row]

(5.11.6) Provide details of the environmental requirements that suppliers have to meet as part of your organization's purchasing process, and the compliance measures in place.

Climate change

(5.11.6.1) Environmental requirement

Select from:

☑ Disclosure of GHG emissions to your organization (Scope 1, 2 and 3)

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply

☑ Grievance mechanism/ Whistleblowing hotline

☑ On-site third-party audit

☑ Second-party verification

☑ Supplier scorecard or rating

☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:
☑ 100%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:
☑ 100%

(5.11.6.7) % tier 1 supplier-related scope 3 emissions attributable to the suppliers required to comply with this environmental requirement

Select from:
☑ 51-75%

(5.11.6.8) % tier 1 supplier-related scope 3 emissions attributable to the suppliers in compliance with this environmental requirement

Select from:
☑ 51-75%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:
☑ Retain and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:
☑ 100%

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Assessing the efficacy and efforts of non-compliant supplier actions through consistent and quantified metrics

☑ Developing quantifiable, time-bound targets and milestones to bring suppliers back into compliance

☑ Providing information on appropriate actions that can be taken to address non-compliance

(5.11.6.12) Comment

Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct which includes climate-related requirements such as air emissions management, energy efficiency improvements, corporate-wide scope 1 and 2 GHG emissions reduction goal, public disclosure on progress towards the goal, and efforts to minimize their energy consumption and greenhouse gas emissions. In 2023, 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. 100% of our major suppliers completed an RBA Self-Assessment Questionnaire (SAQ). In addition, First Solar conducted 18 onsite audits at supplier sites which included environmental and social criteria based on the RBA Code of Conduct. Out of the 18 audits, 9 suppliers were identified as having significant actual or potential negative environmental impacts relating predominantly to the lack of environmental targets. Each of the identified suppliers (or 100%) has a corrective action plan in place, and we are working with the suppliers to set environmental targets and greenhouse emissions targets. One supplier had air pollution violations and implemented a new emissions control system as part of their corrective action. No suppliers were terminated.

Water

(5.11.6.1) Environmental requirement

Select from:

☑ Setting and monitoring withdrawal reduction targets

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply

☑ Grievance mechanism/ Whistleblowing hotline

☑ On-site third-party audit

☑ Supplier scorecard or rating

☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:

☑ 100%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.5) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue required to comply with this environmental requirement

Select from:

☑ 100%

(5.11.6.6) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue that are in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:

☑ Retain and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:

☑ 100%

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Assessing the efficacy and efforts of non-compliant supplier actions through consistent and quantified metrics

☑ Developing quantifiable, time-bound targets and milestones to bring suppliers back into compliance

☑ Providing information on appropriate actions that can be taken to address non-compliance

(5.11.6.12) Comment

First Solar's supplier agreements require compliance with applicable laws and regulations in addition to First Solar requirements, which may exceed local legal requirements. Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct and require their suppliers to do the same. The RBA code of conduct includes water-related criteria including providing workers with ready access to clean toilet facilities, potable water and sanitary food preparation, water conservation and monitoring, and wastewater management.
[Add row]

(5.11.7) Provide further details of your organization's supplier engagement on environmental issues.

Climate change

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Emissions reduction

(5.11.7.3) Type and details of engagement

Capacity building

☑ Provide training, support and best practices on how to measure GHG emissions

Information collection

☑ Collect targets information at least annually from suppliers

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 76-99%

(5.11.7.6) % of tier 1 supplier-related scope 3 emissions covered by engagement

Select from:

☑ 51-75%

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct and require their suppliers to do the same. In 2023, First Solar conducted 18 onsite audits at supplier sites which included environmental and social criteria based on the RBA Code of Conduct. Out of the 18 audits, 9 suppliers were identified as having significant actual or potential negative environmental impacts relating predominantly to the lack of environmental targets. Each of the identified suppliers (or 100%) has a corrective action plan in place, and we are working with the suppliers to set environmental targets and greenhouse emissions targets. One supplier had air pollution violations and implemented a new emissions control system as part of their corrective action.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:

☑ Yes

Water

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Other, please specify :setting environmental targets, including water targets

(5.11.7.3) Type and details of engagement

Capacity building

☑ Provide training, support and best practices on how to mitigate environmental impact

☑ Support suppliers to set their own environmental commitments across their operations

Information collection

☑ Collect targets information at least annually from suppliers

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 76-99%

(5.11.7.7) % tier 1 suppliers with substantive impacts and/or dependencies related to this environmental issue covered by engagement

Select from:

☑ 51-75%

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

Under the terms of First Solar's supplier agreements, suppliers must commit to comply with the Responsible Business Alliance (RBA) Code of Conduct and require their suppliers to do the same. In 2023, First Solar conducted 18 onsite audits at supplier sites which included environmental and social criteria based on the RBA Code of Conduct. Out of the 18 audits, 9 suppliers were identified as having significant actual or potential negative environmental impacts relating predominantly to the lack of environmental targets. Each of the identified suppliers (or 100%) has a corrective action plan in place, and we are working with the suppliers to set environmental targets, including water targets.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement :RBA Code of Conduct

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:

☑ Yes

[Add row]

(5.11.9) Provide details of any environmental engagement activity with other stakeholders in the value chain.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Investors and shareholders

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Our commitment to Responsible Solar drives our company's ESG strategy and differentiation and is interwoven into every aspect of our business and product lifecycle- from raw material sourcing to end-of-life recycling. Our investors and shareholders appreciate hearing about how First Solar is differentiating itself from the competition and driving environmental and social progress. Many investors have targets of their own and regularly engage with us via ESG engagement calls.

(5.11.9.6) Effect of engagement and measures of success

Increased investment in First Solar and support for the company's ESG strategy and approach to Responsible Solar. As one investor put it: "We'd like to thank you for the example First Solar sets as a company that understands the intertwined nature of sustainability and strategy. In particular, we are impressed by the company's long-standing and differentiated commitment to maintaining the highest global standards at every stage of the manufacturing process, including materials, labor, and policy compliance."

Water

(5.11.9.1) Type of stakeholder

Select from:

☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

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, using less energy, water and semiconductor material than conventional crystalline silicon PV manufacturing. Due to our resource-efficient manufacturing process, First Solar modules have the lowest carbon and water footprint and fastest energy payback time in the industry. Our water footprint advantage is included in our sustainability collateral and presentations to customers to help raise awareness about the sustainability advantage of our products. Customers with their own sustainability goals are particularly interested in understanding how much carbon a First Solar PV plant displaces as well as how much water is saved by avoiding the use of grid electricity. The wholesale commercial and industrial market continues to represent a promising opportunity for the widespread adoption of PV solar technology as corporations undertake certain sustainability commitments.

(5.11.9.6) Effect of engagement and measures of success

Success is measured in terms of customer interest in the environmental attributes of our technology, the inclusion of water or carbon footprint questions in RFPs, and megawatts (MW) sold. Other measures of success include raising awareness about EPEAT, a globally recognized and independently validated ecolabel for sustainable electronics which addresses the full product life cycle, including managing substances in the product, manufacturing energy and water use, product packaging, end-of-life recycling, corporate responsibility and human rights. Our Series 6, Series 6 Plus, and Series 7 products were awarded an EPEAT Silver rating, certifying that they exceeded the basic but stringent environmental and social criteria of a Bronze rating.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

Innovation and collaboration

☑ Align your organization's goals to support customers' targets and ambitions

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

We share information about the sustainability advantage and carbon footprint of our EPEAT-registered solar modules with all our customers whether it is to help them meet government mandated renewable portfolio standards, their own carbon mitigation/neutrality goals, carbon footprint criteria in solar tenders e.g. in France, or responsible procurement requirements. In the United States, the Federal Acquisition Regulation directs federal agencies to procure products and services that meet the Environmental Protection Agency's purchasing program requirements, which includes giving preference to multi-attribute or lifecycle-based standards and ecolabels. EPEAT for Solar is currently the only approved ecolabel for PV modules and power purchase agreements in the US EPA's Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing. We also educate our customers on the importance of considering the embodied carbon of solar PV modules to enable greater decarbonization. In the context of the fight against climate change, all PV technologies are not created equal. Where and how a PV module and its components are manufactured significantly impacts its environmental profile and determines how many greenhouse gas emissions they will be able to avoid and displace. 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, using less energy, water and semiconductor material than conventional crystalline silicon PV manufacturing. Due to our resource-efficient manufacturing process, First Solar modules have the lowest carbon and water footprint and fastest energy payback time in the industry. Our Series 7 module has an even lower environmental footprint- with a carbon and water footprint that is nearly 4X lower than conventional crystalline silicon modules manufactured in China and an energy payback time that is approximately 5X faster. In just two months under high irradiation conditions, First Solar Series 7 PV modules produce more energy than was required to create them. This corresponds to a 180-fold energy return on investment (EROI) over a 30- year project lifetime, providing an abundant net energy gain to the electricity grid. Since our products (solar PV modules) are clean energy producing rather than energy consuming products, they represent 0% of our scope 3 emissions.

(5.11.9.6) Effect of engagement and measures of success

One of the impacts of engagement is that we see customers driving demand for responsible solar, even in markets without carbon footprint requirements. Corporate renewable energy buyers in particular are increasingly looking to go "Beyond the Megawatt" of renewables that they are purchasing to ensure their projects are as environmentally and socially responsible as possible. Measures of success include customers requesting lower-carbon solar or EPEAT-registered PV modules in their RFPs. These engagements receive high priority as they are commercial opportunities. By partnering with First Solar, our customers can confidently procure solar modules that are responsibly made and that lower their scope 3 greenhouse gas emissions.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify :Clean Energy Buyers Institute,

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

Innovation and collaboration

☑ Collaborate with stakeholders on innovations to reduce environmental impacts in products and services

☑ Run a campaign to encourage innovation to reduce environmental impacts

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

We partner with non-profits like the Global Electronics Council, Clean Energy Buyers Institute and the Ultra Low-Carbon Solar Alliance to drive awareness about the embodied carbon of solar modules. Although solar PV manufacturing represents a small percentage of global emissions today, a business-as-usual approach would lead it to exceed aluminum manufacturing (the fourth most emissions-intensive industrial commodity) by 2040. A 2022 study by the National Renewable Energy Laboratory (NREL) estimated that relying on crystalline silicon modules produced in coal-intensive grids could consume as much as 14% of the remaining carbon budget for a 1.5C world, resulting in 68 billion metric tons of CO2. We encourage the adoption of credible initiatives that push the solar industry towards greater sustainability.

(5.11.9.6) Effect of engagement and measures of success

Success criteria include increased specification of sustainability criteria (e.g. EPEAT registered products, carbon footprint thresholds, high-value recycling) in the procurement of solar modules and power purchase agreements. In 2023, The Clean Energy Buyers Institute launched the Beyond the Megawatt Toolkit, which helps customers evaluate and identify energy projects and suppliers that optimize environmental sustainability, social equity, and resilience criteria. In 2024, First Solar's Series 6 Plus and Series 7 TR1 products became the world's first PV modules to meet EPEAT's ultra-low-carbon solar criteria and achieve EPEAT Silver with Climate designation. Managed by the Global Electronics Council (GEC), a mission-driven non-profit that seeks to create a world with only sustainable electronics, EPEAT combines rigorous and comprehensive criteria with ongoing independent third-party verification, which provides a critical layer of credibility compared to other ecolabels and standards. As a result, EPEAT is used by more purchasers of electronics than any other ecolabel worldwide. In the United States, the Federal Acquisition Regulation directs federal agencies to procure products and services that meet the Environmental Protection Agency's purchasing program requirements, which includes giving preference to multi-attribute or lifecycle based standards and ecolabels. EPEAT for Solar is currently the only approved ecolabel for PV modules and power purchase agreements.

Water

(5.11.9.1) Type of stakeholder

Select from:

☑ Investors and shareholders

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

First Solar engages with investors and shareholders on ESG topics through engagement calls, surveys and our annual sustainability report to provide updates on our ESG performance. This includes improvements in the water footprint of our products, water recycling initiatives and manufacturing water intensity reductions.

(5.11.9.6) Effect of engagement and measures of success

Success is measured in terms of investor interest in the environmental attributes of our technology and First Solar's ESG performance. Other measures of success include raising awareness about EPEAT, a globally recognized and independently validated ecolabel for sustainable electronics which addresses the full product life cycle, including managing substances in the product, manufacturing energy and water use, product packaging, end-of-life recycling, corporate responsibility and human rights. Our Series 6, Series 6 Plus, and Series 7 products were awarded an EPEAT Silver rating, certifying that they exceeded the basic but stringent environmental and social criteria of a Bronze rating.
[Add row]

(5.12) Indicate any mutually beneficial environmental initiatives you could collaborate on with specific CDP Supply Chain members.

Row 1

(5.12.1) Requesting member

Select from:

(5.12.2) Environmental issues the initiative relates to

Select all that apply
☑ Climate change

(5.12.4) Initiative category and type

Change to supplier operations
☑ Increase proportion of renewable energy purchased

(5.12.5) Details of initiative

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.

(5.12.6) Expected benefits

Select all that apply

☑ Reduction of own operational emissions (own scope 1 & 2)

(5.12.7) Estimated timeframe for realization of benefits

Select from:

☑ 3-5 years

(5.12.8) Are you able to estimate the lifetime CO2e and/or water savings of this initiative?

Select from:

☑ Yes, lifetime CO2e savings only

(5.12.9) Estimated lifetime CO2e savings

700000

(5.12.11) Please explain

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.

Row 2

(5.12.1) Requesting member

Select from:

(5.12.2) Environmental issues the initiative relates to

Select all that apply

☑ Climate change

(5.12.4) Initiative category and type

Change to supplier operations

☑ Increase proportion of renewable energy purchased

(5.12.5) Details of initiative

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.

(5.12.6) Expected benefits

Select all that apply

☑ Reduction of own operational emissions (own scope 1 & 2)

(5.12.7) Estimated timeframe for realization of benefits

Select from:

☑ 3-5 years

(5.12.8) Are you able to estimate the lifetime CO2e and/or water savings of this initiative?

Select from:

☑ Yes, lifetime CO2e savings only

(5.12.9) Estimated lifetime CO2e savings

700000

(5.12.11) Please explain

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.

Row 3

(5.12.1) Requesting member

Select from:

(5.12.2) Environmental issues the initiative relates to

Select all that apply

☑ Climate change

(5.12.4) Initiative category and type

Change to supplier operations

☑ Increase proportion of renewable energy purchased

(5.12.5) Details of initiative

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.

(5.12.6) Expected benefits

Select all that apply

☑ Reduction of own operational emissions (own scope 1 & 2)

(5.12.7) Estimated timeframe for realization of benefits

Select from:

☑ 3-5 years

(5.12.8) Are you able to estimate the lifetime CO2e and/or water savings of this initiative?

Select from:

☑ Yes, lifetime CO2e savings only

(5.12.9) Estimated lifetime CO2e savings

700000

(5.12.11) Please explain

First Solar has committed to RE100 in its U.S. operations by 2026 and globally by 2028. To support these goals, First Solar may develop a request for proposals to source renewable electricity for its manufacturing facilities. For example, a 100 MW solar facility providing renewable electricity to First Solar's Perrysburg, Ohio manufacturing facility via PPA/VPPA could avoid 700,000 metric tons CO2-eq over a 15 year power purchase agreement.
[Add row]

(5.13) Has your organization already implemented any mutually beneficial environmental initiatives due to CDP Supply Chain member engagement?

	Environmental initiatives implemented due to CDP Supply Chain member engagement
	Select from: ☑ Yes

[Fixed row]

(5.13.1) Specify the CDP Supply Chain members that have prompted your implementation of mutually beneficial environmental initiatives and provide information on the initiatives.

Row 1

(5.13.1.1) Requesting member

Select from:

(5.13.1.2) Environmental issues the initiative relates to

Select all that apply

☑ Climate change

(5.13.1.4) Initiative ID

Select from:

☑ Ini1

(5.13.1.5) Initiative category and type

Relationship sustainability assessment

☑ Align goals to feed into customers targets and ambitions

(5.13.1.6) Details of initiative

In 2023, we held a joint ESG summit which enabled our companies to share our goals and how they can feed into Orsted's goals and exchange best practices on key topics including climate change and our transition plan.

(5.13.1.7) Benefits achieved

Select all that apply

☑ Other, please specify **:**Sharing best practices and identifying opportunities for collaboration

(5.13.1.8) Are you able to provide figures for emissions savings or water savings in the reporting year?

Select from:

☑ Yes, emissions savings and water savings

(5.13.1.9) Estimated savings in the reporting year in metric tons of CO2e

7779

(5.13.1.10) Estimated water savings in the reporting year in megaliters

318

(5.13.1.11) Please explain how success for this initiative is measured

Since 2009, we have successfully reduced our greenhouse gas emissions, energy, water, and waste intensity per watt produced by implementing resource conservation and low-carbon projects at our facilities and through improvements in module efficiency, manufacturing throughput, manufacturing yield, and capacity utilization. In 2023, our global energy conservation projects resulted in annual savings of 7,779 metrics tons of CO2eq. Since 2020, we have reduced our manufacturing water intensity by 48%. In 2023, our manufacturing water intensity decreased by 6% compared to 2022, due to increased water recycling initiatives. We recycled 318 million liters of water in 2023, an 88% increase in water recycling compared to 2022.

(5.13.1.12) Would you be happy for CDP Supply Chain members to highlight this work in their external communication?

Select from:

☑ Yes

[Add row]

C6. Environmental Performance - Consolidation Approach

(6.1) Provide details on your chosen consolidation approach for the calculation of environmental performance data.

Climate change

(6.1.1) Consolidation approach used

Select from:

☑ Equity share

(6.1.2) Provide the rationale for the choice of consolidation approach

By using the equity share approach, First Solar can account for GHG emissions based on our ownership stake in joint ventures or partnerships, ensuring we report only our proportional share of emissions rather than the entire project's emissions. This method aligns well with our financial reporting, making it consistent and clear for our investors and stakeholders. It also allows us to take responsibility for emissions in projects where we don't have full operational control, demonstrating our influence over emissions management. Additionally, this approach provides us with the flexibility to accurately report emissions from projects where we have ownership but are not directly involved in operations.

Water

(6.1.1) Consolidation approach used

Select from:

☑ Equity share

(6.1.2) Provide the rationale for the choice of consolidation approach

By using the equity share approach, First Solar can account for GHG emissions based on our ownership stake in joint ventures or partnerships, ensuring we report only our proportional share of emissions rather than the entire project's emissions. This method aligns well with our financial reporting, making it consistent and clear for our investors and stakeholders. It also allows us to take responsibility for emissions in projects where we don't have full operational control, demonstrating our influence over emissions management. Additionally, this approach provides us with the flexibility to accurately report emissions from projects where we have ownership but are not directly involved in operations.

Plastics

(6.1.1) Consolidation approach used

Select from:

☑ Other, please specify **:**N/A

(6.1.2) Provide the rationale for the choice of consolidation approach

N/A

Biodiversity

(6.1.1) Consolidation approach used

Select from:

☑ Other, please specify **:**N/A

(6.1.2) Provide the rationale for the choice of consolidation approach

N/A
[Fixed row]

C7. Environmental performance - Climate Change

(7.1) Is this your first year of reporting emissions data to CDP?

Select from:
☑ No

(7.1.1) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

(7.1.1.1) Has there been a structural change?

Select all that apply
☑ Yes, an acquisition

(7.1.1.2) Name of organization(s) acquired, divested from, or merged with

In 2023 we acquired Evolar AB (“Evolar”), a European developer of perovskite technology.

(7.1.1.3) Details of structural change(s), including completion dates

First Solar acquired Evolar on May 12, 2023. The purchase price was approximately 38 million paid at closing and up to an additional 42 million to be paid subject to certain technical milestones being achieved in the future. The impact to 2023 operating expenses is expected to be approximately 2-4 million, excluding the impact of purchase price accounting.
[Fixed row]

(7.1.2) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?
	Select all that apply ☑ No

[Fixed row]

(7.1.3) Have your organization’s base year emissions and past years’ emissions been recalculated as a result of any changes or errors reported in 7.1.1 and/or 7.1.2?

(7.1.3.1) Base year recalculation

Select from:

☑ No, because the impact does not meet our significance threshold

(7.1.3.3) Base year emissions recalculation policy, including significance threshold

First Solar utilizes the equity share approach for greenhouse gas calculations, and since the office for Evolar is leased, it is not included in our boundary.

(7.1.3.4) Past years’ recalculation

Select from:

☑ No

[Fixed row]

(7.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Select all that apply

☑ The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

(7.3) Describe your organization's approach to reporting Scope 2 emissions.

	Scope 2, location-based	Scope 2, market-based	Comment
	Select from: ☑ We are reporting a Scope 2, location-based figure	*Select from:* ☑ We are reporting a Scope 2, market-based figure	*We follow the Greenhouse Gas Protocol using the equity share approach*

[Fixed row]

(7.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1, Scope 2 or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure?

Select from:

☑ No

(7.5) Provide your base year and base year emissions.

Scope 1

(7.5.1) Base year end

12/31/2008

(7.5.2) Base year emissions (metric tons CO2e)

1020.0

(7.5.3) Methodological details

We follow the Greenhouse Gas Protocol using the equity control approach

Scope 2 (location-based)

(7.5.1) Base year end

12/31/2008

(7.5.2) Base year emissions (metric tons CO2e)

123046.0

(7.5.3) Methodological details

We follow the Greenhouse Gas Protocol using the equity control approach

Scope 2 (market-based)

(7.5.1) Base year end

12/31/2008

(7.5.2) Base year emissions (metric tons CO2e)

123046.0

(7.5.3) Methodological details

We follow the Greenhouse Gas Protocol using the equity control approach

Scope 3 category 1: Purchased goods and services

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

1232301.0

(7.5.3) Methodological details

Emissions were calculated based on life cycle assessment of First Solar PV module production and supply chain GWP of module production (kg CO2-eq/m2; Series 6 NEPD-2993-1671-EN 2021, Series 7 NEPD-5039-4377-EN) and total modules produced in 2023, while subtracting 2023 Scope 1 and 2 emissions.

Scope 3 category 2: Capital goods

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

295327.0

(7.5.3) Methodological details

Capital expenditures on purchases of property, plant, and equipment were the basis for the estimate. Specifically, our capital expenditures are disclosed as 'purchases of property, plant, and equipment' in our annual report's consolidated cash flow statement. The emissions are calculated by multiplying our 2023 capital goods spend by a CO2 emission factor based on the broad sector of purchase.

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

139049.0

(7.5.3) Methodological details

Quantities of purchased electricity were the basis for the estimate. Specifically, GHG emissions from transmission and distribution losses were estimated from market-based Scope 2 GHG emissions from purchased electricity (presented earlier) in conjunction with a transmission and distribution loss factor of 5%.

Scope 3 category 4: Upstream transportation and distribution

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

69252.0

(7.5.3) Methodological details

GHG Emissions were extrapolated from glass and aluminum supply distances and transport methods combined with data on modules produced in 2022. Specifically, glass and aluminum supply distances to First Solar's manufacturing facilities used in conjunction with transoceanic freight ship fuel consumption factor of 0.0025 kg heavy fuel oil per tonne km and a residual fuel oil emission factor from WRI GHG Protocol stationary combustion tool (V. 4.1). GHG Emissions were estimated from quantity of PV modules produced in 2021 in conjunction with port to port distance. Specifically, finished product (PV module) transport distances and transport methods (ship) from our manufacturing facilities to our largest market (U.S.; Long Beach, CA used as representative port) were used in conjunction with a transoceanic freight ship fuel consumption factor of 0.0025 kg heavy fuel oil per tonne-km and a residual fuel oil emission factor from WRI GHG Protocol stationary combustion tool (V. 4.1).

Scope 3 category 5: Waste generated in operations

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

5108.0

(7.5.3) Methodological details

Quantities of disposed non-hazardous and hazardous waste were the basis for the estimate. Quantity of disposed waste from manufacturing facilities was used in conjunction with U.S. EPA mixed waste landfilling emission factor of 0.12 Metric Ton Carbon Equivalent /Ton. The mass conversion factor of mass carbon to mass CO2 generated during combustion processes is 44/12.

Scope 3 category 6: Business travel

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

650.0

(7.5.3) Methodological details

Well-to-wheel life cycle stages were covered in the calculation. Short, medium, and long-haul passenger air miles recorded by corporate travel agent were used in conjunction with air travel emission factors of 0.53, 0.43, and 0.39 lb CO2 per passenger mile, respectively.

Scope 3 category 7: Employee commuting

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

4201.0

(7.5.3) Methodological details

Employee commuting was calculated by multiplying number of full time staff with average emission factor for commuting

Scope 3 category 8: Upstream leased assets

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3 category 9: Downstream transportation and distribution

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3 category 10: Processing of sold products

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3 category 11: Use of sold products

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3 category 12: End of life treatment of sold products

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

1290.0

(7.5.3) Methodological details

N/A

Scope 3 category 13: Downstream leased assets

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

463.0

(7.5.3) Methodological details

Average Data Method

Scope 3 category 14: Franchises

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3 category 15: Investments

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3: Other (upstream)

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A

Scope 3: Other (downstream)

(7.5.1) Base year end

12/31/2020

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

N/A
[Fixed row]

(7.6) What were your organization’s gross global Scope 1 emissions in metric tons CO2e?

	Gross global Scope 1 emissions (metric tons CO2e)	Methodological details
Reporting year	*11638*	*We follow the Greenhouse Gas Protocol using the equity share approach*

[Fixed row]

(7.7) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

	Gross global Scope 2, location-based emissions (metric tons CO2e)	Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)	Methodological details
Reporting year	*793171*	*776502*	*We follow the Greenhouse Gas Protocol using the equity share approach*

[Fixed row]

(7.8) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

2347907

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Life cycle assessment method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

Emissions were calculated based on life cycle assessment of First Solar PV module production and supply chain GWP of module production (kg CO2-eq/m2; Series 6 NEPD-2993-1671-EN 2021, Series 7 NEPD-5039-4377-EN) and total modules produced in 2023, while subtracting 2023 Scope 1 and 2 emissions.

Capital goods

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

983001

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Spend-based method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

Capital expenditures on purchases of property, plant, and equipment were the basis for the estimate. Specifically, our capital expenditures are disclosed as 'purchases of property, plant, and equipment' in our annual report's consolidated cash flow statement. The emissions are calculated by multiplying our 2023 capital goods spend by a CO2 emission factor based on the broad sector of purchase.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

180097

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

Quantities of purchased electricity were the basis for the estimate. Specifically, GHG emissions from transmission and distribution losses were estimated from market-based Scope 2 GHG emissions from purchased electricity (presented earlier) in conjunction with a transmission and distribution loss factor of 5%.

Upstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

139568

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Distance-based method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

GHG Emissions were extrapolated from glass and aluminum supply distances and transport methods combined with data on modules produced in 2022. Specifically, glass and aluminum supply distances to First Solar's manufacturing facilities used in conjunction with transoceanic freight ship fuel consumption factor of 0.0025 kg heavy fuel oil per tonne km and a residual fuel oil emission factor from WRI GHG Protocol stationary combustion tool (V. 4.1). GHG Emissions were estimated from quantity of PV modules produced in 2021 in conjunction with port to port distance. Specifically, finished product (PV module) transport distances and transport methods (ship) from our manufacturing facilities to our largest market (U.S.; Long Beach, CA used as representative port) were used in conjunction with a transoceanic freight ship fuel consumption factor of 0.0025 kg heavy fuel oil per tonne-km and a residual fuel oil emission factor from WRI GHG Protocol

Waste generated in operations

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

3811

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Waste-type-specific method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

Quantities of disposed non-hazardous and hazardous waste were the basis for the estimate. Quantity of disposed waste from manufacturing facilities was used in conjunction with U.S. EPA mixed waste landfilling emission factor of 0.12 Metric Ton Carbon Equivalent /Ton. The mass conversion factor of mass carbon to mass CO2 generated during combustion processes is 44/12.

Business travel

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

2332

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Supplier-specific method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

(7.8.5) Please explain

Well-to-wheel life cycle stages were covered in the calculation. Short, medium, and long-haul passenger air miles recorded by corporate travel agent were used in conjunction with air travel emission factors of 0.53, 0.43, and 0.39 lb CO2 per passenger mile, respectively.

Employee commuting

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

2619

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

Employee commuting was calculated by multiplying number of full time staff with average emission factor for commuting

Upstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

In 2022, we calculated upstream leased assets for our Goodyear facility in Arizona. However, we did not have this facility in 2023

Downstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Shipment of our products to customer project sites is included in upstream transportation and distribution, therefore, the downstream transportation and distribution emissions category has no associated emissions.

Processing of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Our products are not further processed. In less than 4 hours, First Solar's fully integrated manufacturing process transforms a sheet of glass into a completed thin film solar PV module, which is flash tested, boxed, and ready for shipment. All processes from the beginning of our manufacturing process to completed module are covered in our scope 1 and 2 emissions.

Use of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Our products (PV modules) are electricity producing rather than energy consuming products, and are classified as zero-emission electricity generation technologies. First Solar PV solar modules generate clean reliable electricity with no air emissions, waste production, and minimal water use. In 2022, First Solar produced 12.1GW of PV solar modules.

End of life treatment of sold products

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

815

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Life cycle assessment method

(7.8.4) Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

(7.8.5) Please explain

GHG emissions were estimated from quantity of end of life PV modules recycled in 2023 in conjunction with an electricity consumption factor from a previous year's life cycle assessment. Specifically, electricity consumption per square meter of PV module recycled (DOI: 10.4229/27thEUPVSEC2012-6CV.4.9) was used in conjunction with quantities of end-of-life PV modules recycled at First Solar's recycling facilities in U.S., Germany, Vietnam, and Malaysia and market-specific GHG electricity emission factors. First Solar, as part of its commitment to extended producer responsibility, has voluntarily established and implemented the industry's first global module recycling program. Note that since these recycling facilities are owned and operated by First Solar, their greenhouse gas emissions are already accounted for within Scope 1 and 2.

Downstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Due to the change in calculation methodology in accordance with our 2022 Scope 3 audit, the Downstream leased assets have no emissions.

Franchises

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

We do not have franchises; therefore, no scope 3 emissions are relevant or need to be reported.

Investments

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

We previously accounted for Scope 3 emissions from solar projects during the construction phase. However, following the sale of the engineering, procurement, and construction (EPC) business unit in a prior reporting year, these emissions are no longer relevant

Other (upstream)

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

There are no other relevant Scope 3 GHG emissions from upstream sources.

Other (downstream)

(7.8.1) Evaluation status

Select from:
☑ Not relevant, explanation provided

(7.8.5) Please explain

There are no other relevant Scope 3 GHG emissions from downstream sources.
[Fixed row]

(7.9) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	*Select from:* ☑ Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	*Select from:* ☑ Third-party verification or assurance process in place
Scope 3	*Select from:* ☑ No third-party verification or assurance

[Fixed row]

(7.9.1) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Row 1

(7.9.1.1) Verification or assurance cycle in place

Select from:

☑ Annual process

(7.9.1.2) Status in the current reporting year

Select from:

☑ Complete

(7.9.1.3) Type of verification or assurance

Select from:

☑ Limited assurance

(7.9.1.4) Attach the statement

First Solar Inc. 2023 CDP Verification Report Final - issued 20240903 - amended reissued 20240910.pdf

(7.9.1.5) Page/section reference

10

(7.9.1.6) Relevant standard

Select from:

☑ ISO14064-3

(7.9.1.7) Proportion of reported emissions verified (%)

100
[Add row]

(7.9.2) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Row 1

(7.9.2.1) Scope 2 approach

Select from:
☑ Scope 2 location-based

(7.9.2.2) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.2.3) Status in the current reporting year

Select from:
☑ Complete

(7.9.2.4) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.2.5) Attach the statement

First Solar Inc. 2023 CDP Verification Report Final - issued 20240903 - amended reissued 20240910.pdf

(7.9.2.6) Page/ section reference

10

(7.9.2.7) Relevant standard

Select from:
☑ ISO14064-3

(7.9.2.8) Proportion of reported emissions verified (%)

100

Row 2

(7.9.2.1) Scope 2 approach

Select from:
☑ Scope 2 market-based

(7.9.2.2) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.2.3) Status in the current reporting year

Select from:
☑ Complete

(7.9.2.4) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.2.5) Attach the statement

(7.9.2.6) Page/ section reference

10

(7.9.2.7) Relevant standard

Select from:
☑ ISO14064-3

(7.9.2.8) Proportion of reported emissions verified (%)

100
[Add row]

(7.10) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Select from:
☑ Increased

(7.10.1) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

Change in renewable energy consumption

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Last year, we produced 7,172 MWh of renewable energy, and this year, in 2023, we produced 7,532 MWh. However, this energy is self-generated and does not produce emissions

Other emissions reduction activities

(7.10.1.1) Change in emissions (metric tons CO2e)

7779

(7.10.1.2) Direction of change in emissions

Select from:
☑ Decreased

(7.10.1.3) Emissions value (percentage)

1

(7.10.1.4) Please explain calculation

We implemented several projects in 2023 to reduce emissions, which collectively resulted in a reduction of 7779 metric tons CO2e. These efforts included 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. Percentage Calculation: 7779/776502 0.01%

Divestment

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Acquisitions

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Mergers

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Change in output

(7.10.1.1) Change in emissions (metric tons CO2e)

216797

(7.10.1.2) Direction of change in emissions

Select from:

☑ Increased

(7.10.1.3) Emissions value (percentage)

38

(7.10.1.4) Please explain calculation

From 2022 to 2023, First Solar increased its production of PV solar modules by 33%, from 9.1 GW to 12.1 GW. This increased output corresponds to an increase of 216,797 metric tons CO2e of emissions for Scope 1 and 2 emissions, or a 38% increase in emissions compared to the previous year's emissions.

Change in methodology

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Change in boundary

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Change in physical operating conditions

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Unidentified

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023

Other

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ Increased

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable in 2023
[Fixed row]

(7.10.2) Are your emissions performance calculations in 7.10 and 7.10.1 based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Select from:
☑ Market-based

(7.11) How do your total Scope 3 emissions for the reporting year compare to those of the previous reporting year?

Select from:
☑ Increased

(7.11.1) For each Scope 3 category calculated in 7.8, specify how your emissions compare to the previous year and identify the reason for any change.

Purchased goods and services

(7.11.1.1) Direction of change

Select from:

☑ Increased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in output

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

592776

(7.11.1.4) % change in emissions in this category

33.7

(7.11.1.5) Please explain

Emissions were calculated based on life cycle assessment of First Solar PV module production and total modules produced in 2023, and subtracting 2023 Scope 1 and 2 emissions. Since manufacturing output increased in 2023 compared to 2022, emissions from purchased goods and services increased approximately proportionally.

Capital goods

(7.11.1.1) Direction of change

Select from:

☑ Increased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in physical operating conditions

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

342490

(7.11.1.4) % change in emissions in this category

53.47

(7.11.1.5) Please explain

Capital expenditures on purchases of property, plant, and equipment were the basis for the estimate. These capital expenditures were 27% higher in 2023 than 2022 due to construction of new R&D and manufacturing facilities in USA and India.

Fuel and energy-related activities (not included in Scopes 1 or 2)

(7.11.1.1) Direction of change

Select from:

☑ Decreased

(7.11.1.2) Primary reason for change

Select from:

☑ Unidentified

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

1548

(7.11.1.4) % change in emissions in this category

0.85

(7.11.1.5) Please explain

GHG emissions from transmission and distribution losses were estimated from market-based Scope 2 GHG emissions from purchased electricity in conjunction with a transmission and distribution loss factor of 5%.

Upstream transportation and distribution

(7.11.1.1) Direction of change

Select from:

☑ Increased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in physical operating conditions

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

50645.42

(7.11.1.4) % change in emissions in this category

56.95

(7.11.1.5) Please explain

Life cycle emissions were calculated on a well-to-wheel basis. Upstream transportation and distribution emissions were estimated based on raw material weight and distance (tonne-km) supplied to First Solar's manufacturing facilities. We sold more modules in 2023 compared to 2022, explaining the increase.

Waste generated in operations

(7.11.1.1) Direction of change

Select from:

☑ Increased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in physical operating conditions

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

759.9

(7.11.1.4) % change in emissions in this category

25

(7.11.1.5) Please explain

Quantities of disposed non-hazardous and hazardous waste were the basis for the estimate. In 2023, we disposed of 52,471 Metric Tons compared to 48,210 Metric Tons in 2022. Note that approximately 45,575 were diverted from disposal in 2023, with 42,589 recycled. Quantity of disposed waste from manufacturing facilities was used in conjunction with U.S. EPA mixed waste landfilling emission factor of 0.12 Metric Ton Carbon Equivalent /Ton. The mass conversion factor of mass carbon to mass CO2 generated during combustion processes is 44/12.

Business travel

(7.11.1.1) Direction of change

Select from:

☑ Decreased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in physical operating conditions

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

2213

(7.11.1.4) % change in emissions in this category

48.69

(7.11.1.5) Please explain

Emissions from business travel were provided by our travel provider

Employee commuting

(7.11.1.1) Direction of change

Select from:
☑ Decreased

(7.11.1.2) Primary reason for change

Select from:
☑ Change in physical operating conditions

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

1911

(7.11.1.4) % change in emissions in this category

42.19

(7.11.1.5) Please explain

At First Solar, we calculate the carbon emissions from our employees by estimating the average annual emissions generated per individual, including activities such as commuting, business travel, and workplace energy consumption. For full-time employees, we have determined an average annual carbon footprint of 1,700 kg CO2-equivalent per year. This figure is based on industry standards and our internal assessments of employee-related emissions sources.

End-of-life treatment of sold products

(7.11.1.1) Direction of change

Select from:

☑ Decreased

(7.11.1.2) Primary reason for change

Select from:

☑ Change in material efficiency

(7.11.1.3) Change in emissions in this category (metric tons CO2e)

160.85

(7.11.1.4) % change in emissions in this category

16.48

(7.11.1.5) Please explain

GHG emissions were estimated from quantity of end of life PV modules recycled in 2023 in conjunction with an electricity consumption factor from a previous year's life cycle assessment. Specifically, electricity consumption per square meter of PV module recycled was used in conjunction with quantities of end-of-life PV modules recycled at First Solar's recycling facilities in U.S., Germany, Vietnam, and Malaysia and market-specific GHG electricity emission factors. First Solar, as part of its commitment to extended producer responsibility, has voluntarily established and implemented the industry's first global module recycling program. Note that since these recycling facilities are owned and operated by First Solar, their greenhouse gas emissions are already accounted for within Scope 1 and 2
[Fixed row]

(7.12) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Select from:
☑ No

(7.15) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Select from:
☑ Yes

(7.15.1) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used global warming potential (GWP).

Row 1

(7.15.1.1) Greenhouse gas

Select from:
☑ CO2

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

10805.43

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fourth Assessment Report (AR4 - 100 year)

Row 2

(7.15.1.1) Greenhouse gas

Select from:
☑ CH4

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

8

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fourth Assessment Report (AR4 - 100 year)

Row 3

(7.15.1.1) Greenhouse gas

Select from:
☑ N2O

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

8.62

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fourth Assessment Report (AR4 - 100 year)

Row 4

(7.15.1.1) Greenhouse gas

Select from:
☑ HFCs

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

817.3

(7.15.1.3) GWP Reference

Select from:

☑ IPCC Fourth Assessment Report (AR4 - 100 year)

[Add row]

(7.16) Break down your total gross global Scope 1 and 2 emissions by country/area.

	Scope 1 emissions (metric tons CO2e)	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Germany	*357*	*676*	*631*
India	*552*	*86402*	*89266*
Malaysia	*932*	*243446*	*208551*
Samoa	*0*	*20*	*20*
United States of America	*8939*	*245732*	*245732*
Viet Nam	*476*	*215735*	*231142*

[Fixed row]

(7.17) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

Select all that apply

☑ By facility

☑ By activity

(7.17.2) Break down your total gross global Scope 1 emissions by business facility.

Row 1

(7.17.2.1) Facility

Santa Clara, California, USA

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

384

(7.17.2.3) Latitude

37.371053

(7.17.2.4) Longitude

-121.951931

Row 3

(7.17.2.1) Facility

Mesa, Arizona, USA

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

0

(7.17.2.3) Latitude

33.32144

(7.17.2.4) Longitude

-111.65812

Row 4

(7.17.2.1) Facility

Ho Chi Minh City, Viet Nam

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

476

(7.17.2.3) Latitude

10.77653

(7.17.2.4) Longitude

106.70098

Row 5

(7.17.2.1) Facility

Kulim, Malaysia

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

932

(7.17.2.3) Latitude

5.428624

(7.17.2.4) Longitude

100.572598

Row 6

(7.17.2.1) Facility

Frankfurt-Oder, Germany

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

357

(7.17.2.3) Latitude

52.312919

(7.17.2.4) Longitude

14.481102

Row 7

(7.17.2.1) Facility

Perrysburg, Ohio, USA

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

8939

(7.17.2.3) Latitude

41.557058

(7.17.2.4) Longitude

-83.552515

Row 8

(7.17.2.1) Facility

Tamil Nadu, India

(7.17.2.2) Scope 1 emissions (metric tons CO2e)

552

(7.17.2.3) Latitude

12.95687

(7.17.2.4) Longitude

79.97104
[Add row]

(7.17.3) Break down your total gross global Scope 1 emissions by business activity.

	Activity	Scope 1 emissions (metric tons CO2e)
Row 1	*Mobile Source Emissions*	*10*
Row 3	*Process Emissions*	*0*
Row 4	*Fugitive Emissions*	*1162*
Row 5	*Stationary Combustion*	*10467*

[Add row]

(7.20) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

Select all that apply

☑ By facility

(7.20.2) Break down your total gross global Scope 2 emissions by business facility.

Row 1

(7.20.2.1) Facility

Perrysburg, Ohio, USA

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

245732

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

245732

Row 3

(7.20.2.1) Facility

Owned Operational Solar Projects

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

29

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

29

Row 4

(7.20.2.1) Facility

Ho Chi Minh City, Viet Nam

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

215735

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

231142

Row 5

(7.20.2.1) Facility

Mesa, Arizona, USA

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

81

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

81

Row 6

(7.20.2.1) Facility

Santa Clara, California, USA

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

1071

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

1071

Row 7

(7.20.2.1) Facility

Kulim, Malaysia

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

243446

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

208551

Row 8

(7.20.2.1) Facility

Frankfurt-Oder, Germany

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

676

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

631

Row 9

(7.20.2.1) Facility

Tamil Nadu, India

(7.20.2.2) Scope 2, location-based (metric tons CO2e)

86402

(7.20.2.3) Scope 2, market-based (metric tons CO2e)

89266
[Add row]

(7.22) Break down your gross Scope 1 and Scope 2 emissions between your consolidated accounting group and other entities included in your response.

Consolidated accounting group

(7.22.1) Scope 1 emissions (metric tons CO2e)

11639

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

793171

(7.22.3) Scope 2, market-based emissions (metric tons CO2e)

776502

(7.22.4) Please explain

We report emissions as a single entity under First Solar. Our emissions data covers the entire consolidated accounting group, which includes the parent organization and all consolidated subsidiaries. There are no emissions reported from entities outside of this group, such as associates, joint ventures, or unconsolidated subsidiaries.

All other entities

(7.22.1) Scope 1 emissions (metric tons CO2e)

11639

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

793171

(7.22.3) Scope 2, market-based emissions (metric tons CO2e)

776502

(7.22.4) Please explain

We report emissions as a single entity under First Solar. Our emissions data covers the entire consolidated accounting group, which includes the parent organization and all consolidated subsidiaries. There are no emissions reported from entities outside of this group, such as associates, joint ventures, or unconsolidated subsidiaries.
[Fixed row]

(7.23) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?

Select from:
☑ Not relevant as we do not have any subsidiaries

(7.26) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Row 1

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 1

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

329

(7.26.9) Emissions in metric tonnes of CO2e

319.64

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Natural gas and propane heat, diesel backup generators, owned vehicles, HVAC refrigerant leakage, and dry ice usage

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 (329 MW) relative to total goods produced in 2023 (12 GW). Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 1 emissions accounting have low uncertainty due to use of utility bills and other detailed tracking of purchased quantities.

(7.26.14) Where published information has been used, please provide a reference

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Row 2

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

329

(7.26.9) Emissions in metric tonnes of CO2e

21784

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Purchased electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 4

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:
☑ Scope 2: market-based

(7.26.4) Allocation level

Select from:
☑ Company wide

(7.26.6) Allocation method

Select from:
☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:
☑ Other unit, please specify **:**Megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

329

(7.26.9) Emissions in metric tonnes of CO2e

21326

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Purchased electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 5

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 3

(7.26.3) Scope 3 category(ies)

Select all that apply

☑ Category 2: Capital goods
☑ Category 6: Business travel
☑ Category 7: Employee commuting
☑ Category 1: Purchased goods and services
☑ Category 5: Waste generated in operations
☑ Category 12: End-of-life treatment of sold products
☑ Category 4: Upstream transportation and distribution
☑ Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

329

(7.26.9) Emissions in metric tonnes of CO2e

100526

(7.26.10) Uncertainty (±%)

50

(7.26.11) Major sources of emissions

Purchased goods and services and capital goods

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 3 emissions accounting have high uncertainty due to use of screening level estimation methods where supplier data is not available.

(7.26.14) Where published information has been used, please provide a reference

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Row 6

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 1

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify :megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

1223

(7.26.9) Emissions in metric tonnes of CO2e

1186

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Natural gas and propane heat, diesel backup generators, owned vehicles, HVAC refrigerant leakage, and dry ice usage

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 (329 MW) relative to total goods produced in 2023 (12 GW). Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 1 emissions accounting have low uncertainty due to use of utility bills and other detailed tracking of purchased quantities.

(7.26.14) Where published information has been used, please provide a reference

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Row 7

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**megawatt

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

1223

(7.26.9) Emissions in metric tonnes of CO2e

80889

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Purchased electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 8

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: market-based

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

1223

(7.26.9) Emissions in metric tonnes of CO2e

79189

(7.26.10) Uncertainty (±%)

10

(7.26.11) Major sources of emissions

Purchased electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 9

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 3

(7.26.3) Scope 3 category(ies)

Select all that apply

☑ Category 2: Capital goods

☑ Category 6: Business travel

☑ Category 7: Employee commuting

☑ Category 1: Purchased goods and services

☑ Category 12: End-of-life treatment of sold products

☑ Category 4: Upstream transportation and distribution

☑ Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)

☑ Category 5: Waste generated in operations

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify :megawatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

1223

(7.26.9) Emissions in metric tonnes of CO2e

373271

(7.26.10) Uncertainty (±%)

50

(7.26.11) Major sources of emissions

Purchased goods and services and capital goods

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 3 emissions accounting have high uncertainty due to use of screening level estimation methods where supplier data is not available.

(7.26.14) Where published information has been used, please provide a reference

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Row 10

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:
☑ Scope 1

(7.26.4) Allocation level

Select from:
☑ Company wide

(7.26.6) Allocation method

Select from:
☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megwatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

0

(7.26.9) Emissions in metric tonnes of CO2e

0

(7.26.10) Uncertainty (±%)

0

(7.26.11) Major sources of emissions

Natural gas and propane heat, diesel backup generators, owned vehicles, HVAC refrigerant leakage, and dry ice usage

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 (0 MW) relative to total goods produced in 2023 (12 GW). Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 1 emissions accounting have low uncertainty due to use of utility bills and other detailed tracking of purchased quantities.

(7.26.14) Where published information has been used, please provide a reference

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Row 11

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on mass of products purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

0

(7.26.9) Emissions in metric tonnes of CO2e

0

(7.26.10) Uncertainty (±%)

0

(7.26.11) Major sources of emissions

Purchased electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 (0 MW) relative to total goods produced in 2023 (12 GW). Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 12

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: market-based

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

0

(7.26.9) Emissions in metric tonnes of CO2e

0

(7.26.10) Uncertainty (±%)

0

(7.26.11) Major sources of emissions

Purchased Electricity

(7.26.12) Allocation verified by a third party?

Select from:

☑ Yes

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 (0 MW) relative to total goods produced in 2023 (12 GW). Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 2 emissions accounting have low uncertainty due to use of utility bills.

(7.26.14) Where published information has been used, please provide a reference

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Row 13

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 3

(7.26.3) Scope 3 category(ies)

Select all that apply

☑ Category 2: Capital goods

☑ Category 6: Business travel

☑ Category 7: Employee commuting

☑ Category 1: Purchased goods and services

☑ Category 5: Waste generated in operations

☑ Category 12: End-of-life treatment of sold products

☑ Category 4: Upstream transportation and distribution

☑ Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)

(7.26.4) Allocation level

Select from:

☑ Company wide

(7.26.6) Allocation method

Select from:

☑ Allocation based on the number of units purchased

(7.26.7) Unit for market value or quantity of goods/services supplied

Select from:

☑ Other unit, please specify **:**Megawatts

(7.26.8) Market value or quantity of goods/services supplied to the requesting member

0

(7.26.9) Emissions in metric tonnes of CO2e

0

(7.26.10) Uncertainty (±%)

0

(7.26.11) Major sources of emissions

Purchased Goods and Services & Capital Goods

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Company-wide verified emissions inventory has been allocated to customer based on quantity of goods supplied in 2023 relative to total goods produced in 2023. Because First Solar only manufactures one product (PV modules), further product-specific allocation is not required. Scope 3 emissions accounting have high uncertainty due to use of screening level estimation methods where supplier data is not available.

(7.26.14) Where published information has been used, please provide a reference

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[Add row]

(7.27) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Row 1

(7.27.1) Allocation challenges

Select from:
☑ Customer base is too large and diverse to accurately track emissions to the customer level

(7.27.2) Please explain what would help you overcome these challenges

Better coordination between customer and supplier on record-keeping for timing and quantity of goods supplied.
[Add row]

(7.28) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

(7.28.1) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Select from:
☑ Yes

(7.28.2) Describe how you plan to develop your capabilities

We plan to continue allocating emissions based on volume of goods sold based upon request. In our 2024 sustainability report, we included calculations on the avoided emissions achieved through the use of our products. We also provide environmental product declarations for customers who want to understand the carbon footprint of our products.

[Fixed row]

(7.29) What percentage of your total operational spend in the reporting year was on energy?

Select from:
☑ More than 0% but less than or equal to 5%

(7.30) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	*Select from:* ☑ Yes
Consumption of purchased or acquired electricity	*Select from:* ☑ Yes
Consumption of purchased or acquired heat	*Select from:* ☑ No
Consumption of purchased or acquired steam	*Select from:* ☑ No
Consumption of purchased or acquired cooling	*Select from:* ☑ No
Generation of electricity, heat, steam, or cooling	*Select from:* ☑ Yes

[Fixed row]

(7.30.1) Report your organization’s energy consumption totals (excluding feedstocks) in MWh.

Consumption of fuel (excluding feedstock)

(7.30.1.1) Heating value

Select from:

☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

56869

(7.30.1.4) Total (renewable and non-renewable) MWh

56869

Consumption of purchased or acquired electricity

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

1392240

(7.30.1.4) Total (renewable and non-renewable) MWh

1392240

Consumption of self-generated non-fuel renewable energy

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

7532

(7.30.1.4) Total (renewable and non-renewable) MWh

7532

Total energy consumption

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

7532

(7.30.1.3) MWh from non-renewable sources

1449109

(7.30.1.4) Total (renewable and non-renewable) MWh

1456641
[Fixed row]

(7.30.6) Select the applications of your organization’s consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	*Select from:* ☑ Yes
Consumption of fuel for the generation of heat	*Select from:* ☑ Yes
Consumption of fuel for the generation of steam	*Select from:* ☑ No
Consumption of fuel for the generation of cooling	*Select from:* ☑ No
Consumption of fuel for co-generation or tri-generation	*Select from:* ☑ No

[Fixed row]

(7.30.7) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Biomass fuel was not used in 2023

Other biomass

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Biomass fuel was not used in 2023

Other renewable fuels (e.g. renewable hydrogen)

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Other renewable fuel was not used in 2023

Coal

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Coal was not used in 2023

Oil

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

771

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Diesel is used in testing backup power generators at manufacturing facilities and accounts for most of annual oil consumption. The remainder is liquified petroleum gas for food service and gasoline for transportation (owned Box Truck).

Gas

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

56987

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Natural Gas is used for building heating

Other non-renewable fuels (e.g. non-renewable hydrogen)

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

Other non-renewable fuel was not used in 2023

Total fuel

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

57757

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.8) Comment

N/A
[Fixed row]

(7.30.9) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

Electricity

(7.30.9.1) Total Gross generation (MWh)

7532

(7.30.9.2) Generation that is consumed by the organization (MWh)

7532

(7.30.9.3) Gross generation from renewable sources (MWh)

7532

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

7532

Heat

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Steam

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Cooling

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0
[Fixed row]

(7.30.16) Provide a breakdown by country/area of your electricity/heat/steam/cooling consumption in the reporting year.

Germany

(7.30.16.1) Consumption of purchased electricity (MWh)

2163

(7.30.16.2) Consumption of self-generated electricity (MWh)

2596

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:
☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

4759.00

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded

India

(7.30.16.1) Consumption of purchased electricity (MWh)

124731

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:
☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

124731.00

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded

Malaysia

(7.30.16.1) Consumption of purchased electricity (MWh)

372476

(7.30.16.2) Consumption of self-generated electricity (MWh)

1542

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:

☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

374018.00

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded

Samoa

(7.30.16.1) Consumption of purchased electricity (MWh)

40

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:

☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

40.00

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded

United States of America

(7.30.16.1) Consumption of purchased electricity (MWh)

543616

(7.30.16.2) Consumption of self-generated electricity (MWh)

3381

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:
☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

546997.00

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded

Viet Nam

(7.30.16.1) Consumption of purchased electricity (MWh)

341682

(7.30.16.2) Consumption of self-generated electricity (MWh)

13.5

(7.30.16.3) Is some or all of this electricity consumption excluded from your RE100 commitment?

Select from:

☑ No

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

0

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

341695.50

(7.30.16.7) Provide details of the electricity consumption excluded

No electricity consumption excluded
[Fixed row]

(7.30.17) Provide details of your organization’s renewable electricity purchases in the reporting year by country/area.

Row 1

(7.30.17.1) Country/area of consumption of purchased renewable electricity

Select from:
☑ India

(7.30.17.2) Sourcing method

Select from:
☑ Physical power purchase agreement (physical PPA) with a grid-connected generator

(7.30.17.3) Renewable electricity technology type

Select from:
☑ Renewable electricity mix, please specify :solar and wind

(7.30.17.4) Renewable electricity consumed via selected sourcing method in the reporting year (MWh)

0

(7.30.17.5) Tracking instrument used

Select from:
☑ No instrument used

(7.30.17.6) Country/area of origin (generation) of purchased renewable electricity

Select from:

☑ India

(7.30.17.7) Are you able to report the commissioning or re-powering year of the energy generation facility?

Select from:

☑ Yes

(7.30.17.8) Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

2024

(7.30.17.9) Vintage of the renewable energy/attribute (i.e. year of generation)

Select from:

☑ 2024

(7.30.17.10) Supply arrangement start year

2024

(7.30.17.11) Ecolabel associated with purchased renewable electricity

Select from:

☑ No additional, voluntary label

(7.30.17.12) Comment

In November 2023, First Solar entered into a power purchase agreement with Cleantech Solar, a leading provider of renewable energy solutions in India and Southeast Asia. Under the agreement, Cleantech plans to construct certain PV solar (150 MWdc) and wind (16.8 MW) generating assets, which are expected to supply electricity to our manufacturing facility in India starting in Q4 2024. The REC is not applicable as we are physically consuming the units.
[Add row]

(7.30.19) Provide details of your organization’s renewable electricity generation by country/area in the reporting year.

Row 1

(7.30.19.1) Country/area of generation

Select from:

☑ Germany

(7.30.19.2) Renewable electricity technology type

Select from:

☑ Solar

(7.30.19.3) Facility capacity (MW)

2.9

(7.30.19.4) Total renewable electricity generated by this facility in the reporting year (MWh)

2596

(7.30.19.5) Renewable electricity consumed by your organization from this facility in the reporting year (MWh)

2596

(7.30.19.6) Energy attribute certificates issued for this generation

Select from:

☑ No

(7.30.19.8) Comment

We have installed onsite PV installations at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, which generated approximately 7.5 million kWh of solar electricity globally. We installed a 300kW PV carport array which began operating in 2023 at our second manufacturing facility in Ohio, and have installed carports at our facilities in Vietnam and Malaysia.

Row 2

(7.30.19.1) Country/area of generation

Select from:

☑ United States of America

(7.30.19.2) Renewable electricity technology type

Select from:

☑ Solar

(7.30.19.3) Facility capacity (MW)

2.75

(7.30.19.4) Total renewable electricity generated by this facility in the reporting year (MWh)

3380

(7.30.19.5) Renewable electricity consumed by your organization from this facility in the reporting year (MWh)

3380

(7.30.19.6) Energy attribute certificates issued for this generation

Select from:

☑ No

(7.30.19.8) Comment

We have installed onsite PV installations at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, which generated approximately 7.5 million kWh of solar electricity globally. We installed a 300kW PV carport array which began operating in 2023 at our second manufacturing facility in Ohio, and have installed carports at our facilities in Vietnam and Malaysia.

Row 3

(7.30.19.1) Country/area of generation

Select from:

☑ Malaysia

(7.30.19.2) Renewable electricity technology type

Select from:

☑ Solar

(7.30.19.3) Facility capacity (MW)

0.75

(7.30.19.4) Total renewable electricity generated by this facility in the reporting year (MWh)

1541

(7.30.19.5) Renewable electricity consumed by your organization from this facility in the reporting year (MWh)

1541

(7.30.19.6) Energy attribute certificates issued for this generation

Select from:

☑ No

(7.30.19.8) Comment

We have installed onsite PV installations at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, which generated approximately 7.5 million kWh of solar electricity globally. We installed a 300kW PV carport array which began operating in 2023 at our second manufacturing facility in Ohio, and have installed carports at our facilities in Vietnam and Malaysia.

Row 4

(7.30.19.1) Country/area of generation

Select from:

☑ Viet Nam

(7.30.19.2) Renewable electricity technology type

Select from:

☑ Solar

(7.30.19.3) Facility capacity (MW)

0.83

(7.30.19.4) Total renewable electricity generated by this facility in the reporting year (MWh)

13.5

(7.30.19.5) Renewable electricity consumed by your organization from this facility in the reporting year (MWh)

13.5

(7.30.19.6) Energy attribute certificates issued for this generation

Select from:

☑ No

(7.30.19.8) Comment

We have installed onsite PV installations at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, which generated approximately 7.5 million kWh of solar electricity globally. We installed a 300kW PV carport array which began operating in 2023 at our second manufacturing facility in Ohio, and have installed carports at our facilities in Vietnam and Malaysia.
[Add row]

(7.30.20) Describe how your organization's renewable electricity sourcing strategy directly or indirectly contributes to bringing new capacity into the grid in the countries/areas in which you operate.

Our strategy is to phase in a mix of self-generation, physical and/or virtual PPA, and green tariffs and/or energy attribute certificates to meet RE100 commitments. The first two approaches are our preference and would directly contribute to bringing new renewable capacity into the grid. In November 2023, First Solar entered into a power purchase agreement with Cleantech Solar, a leading provider of renewable energy solutions in India and Southeast Asia. Under the agreement, Cleantech plans to construct certain PV solar (150 MWdc) and wind (16.8 MW) generating assets, which are expected to supply electricity to our manufacturing facility in India starting in Q4 2024.

(7.30.21) In the reporting year, has your organization faced barriers or challenges to sourcing renewable electricity?

	Challenges to sourcing renewable electricity
	Select from: ☑ Yes, in specific countries/areas in which we operate

[Fixed row]

(7.30.22) Provide details of the country/area-specific challenges to sourcing renewable electricity faced by your organization in the reporting year.

Row 1

(7.30.22.1) Country/area

Select from:

☑ Malaysia

(7.30.22.2) Reason why it was challenging to source renewable electricity within selected country/area

Select all that apply

☑ Lack of electricity market structure supporting bilateral PPAs

(7.30.22.3) Provide additional details of the barriers faced within this country/area

Offsite power purchase agreements (PPA) between private buyers and sellers of renewable energy are not currently available in Malaysia.

Row 2

(7.30.22.1) Country/area

Select from:

☑ Viet Nam

(7.30.22.2) Reason why it was challenging to source renewable electricity within selected country/area

Select all that apply

☑ Lack of electricity market structure supporting bilateral PPAs

(7.30.22.3) Provide additional details of the barriers faced within this country/area

Direct power purchase agreements (DPPA) between private buyers and sellers of renewable energy were not available in Vietnam in 2023. Energy users could only buy electricity through the national utility or through small-scale projects such as rooftop solar panels. First Solar has joined a consortium of 29 brands urging the Vietnam government to introduce DPPA. In July 2024, the Vietnam government approved a decree on DPPAs, which establishes clear mechanisms for large energy consumers to purchase clean energy supply.
[Add row]

(7.34) Does your organization measure the efficiency of any of its products or services?

(7.34.1) Measurement of product/service efficiency

Select from:

☑ Yes

(7.34.2) Comment

While PV modules are electricity generating (not energy-consuming) devices, the module conversion efficiency is a standard measurement of product efficiency. [Fixed row]

(7.34.1) Provide details of the metrics used to measure the efficiency of your organization's products or services.

Row 1

(7.34.1.1) Category of product or service

Select from:

☑ Solar energy equipment

(7.34.1.2) Product or service (optional)

Photovoltaic module

(7.34.1.3) % of revenue from this product or service in the reporting year

99

(7.34.1.4) Efficiency figure in the reporting year

0.187

(7.34.1.5) Metric numerator

Select from:

☑ Other, please specify :kilowatt

(7.34.1.6) Metric denominator

Select from:

☑ square meter

(7.34.1.7) Comment

In 2023, First Solar's Series 6 and Series 6 Plus PV modules ranged from 18.1% to 19.3% module conversion efficiency, corresponding to 0.181-0.193 kilowatt per square meter or 475-540 watts per module, given a module area of 2.52 square meters. Additionally, the Series 7 PV modules achieved even higher efficiencies, ranging from 18.6% to 19.7%, with power outputs of 530-600 watts per module, also with a module area of 2.62 square meters. During 2023, solar module sales represented approximately 99% of our total net sales.
[Add row]

(7.45) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Row 1

(7.45.1) Intensity figure

65

(7.45.2) Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

788142

(7.45.3) Metric denominator

Select from:

☑ Other, please specify :MW of PV modules produced

(7.45.4) Metric denominator: Unit total

3318602000

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

38

(7.45.7) Direction of change

Select from:

☑ Increased

(7.45.8) Reasons for change

Select all that apply

☑ Change in output

(7.45.9) Please explain

In 2023, our absolute Scope 1 and 2 GHG emissions increased by 38% relative to 2022 due to increased manufacturing output.

Row 2

(7.45.1) Intensity figure

113

(7.45.2) Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

788142

(7.45.3) Metric denominator

Select from:

☑ full time equivalent (FTE) employee

(7.45.4) Metric denominator: Unit total

6957

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

10

(7.45.7) Direction of change

Select from:

☑ Increased

(7.45.8) Reasons for change

Select all that apply

☑ Change in physical operating conditions

(7.45.9) Please explain

In 2023, our absolute Scope 1 and 2 GHG emissions increased by 10% relative to 2022 due to increased manufacturing output, while FTE increased from 5517 in 2022 to 6957 in 2023.

Row 3

(7.45.1) Intensity figure

0.00024

(7.45.2) Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

788142

(7.45.3) Metric denominator

Select from:

☑ unit total revenue

(7.45.4) Metric denominator: Unit total

12142.1

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

3

(7.45.7) Direction of change

Select from:

☑ Increased

(7.45.8) Reasons for change

Select all that apply

☑ Change in output

(7.45.9) Please explain

In 2023, our absolute Scope 1 and 2 GHG emissions increased by 3% relative to 2022 due to increased manufacturing output, while production volume increased from 9077 MW in 2022 to 12100 MW in 2023.
[Add row]

(7.52) Provide any additional climate-related metrics relevant to your business.

Row 1

(7.52.1) Description

Select from:
☑ Energy usage

(7.52.2) Metric value

0.11

(7.52.3) Metric numerator

kilowatt hours

(7.52.4) Metric denominator (intensity metric only)

watt produced

(7.52.5) % change from previous year

0

(7.52.6) Direction of change

Select from:
☑ No change

(7.52.7) Please explain

Our manufacturing energy intensity remained flat in 2023 compared to 2022, largely due to the ramp-up of new manufacturing facilities, offsetting gains in energy efficiency

Row 3

(7.52.1) Description

Select from:

☑ Waste

(7.52.2) Metric value

4.3

(7.52.3) Metric numerator

grams

(7.52.4) Metric denominator (intensity metric only)

Watt produced

(7.52.5) % change from previous year

23

(7.52.6) Direction of change

Select from:

☑ Decreased

(7.52.7) Please explain

In 2023, our manufacturing waste intensity decreased by approximately 23%, primarily due to increased recycling and improved manufacturing throughput

Row 4

(7.52.1) Description

Select from:

☑ Other, please specify **:**Water

(7.52.2) Metric value

0.31

(7.52.3) Metric numerator

Liters

(7.52.4) Metric denominator (intensity metric only)

Watt produced

(7.52.5) % change from previous year

6

(7.52.6) Direction of change

Select from:

☑ Decreased

(7.52.7) Please explain

While our production increased by 33% in 2023, our manufacturing water intensity decreased by 6%, supported by an 88% increase in water recycling initiatives [Add row]

(7.53) Did you have an emissions target that was active in the reporting year?

Select all that apply

☑ Absolute target

☑ Intensity target

(7.53.1) Provide details of your absolute emissions targets and progress made against those targets.

Row 1

(7.53.1.1) Target reference number

Select from:

☑ Abs 1

(7.53.1.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.1.3) Science Based Targets initiative official validation letter

First Solar SBTi v5 Certificate Final.pdf

(7.53.1.4) Target ambition

Select from:

☑ 1.5°C aligned

(7.53.1.5) Date target was set

01/08/2022

(7.53.1.6) Target coverage

Select from:

☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Hydrofluorocarbons (HFCs)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

☑ Scope 3

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.10) Scope 3 categories

Select all that apply

☑ Scope 3, Category 1 – Purchased goods and services

(7.53.1.11) End date of base year

12/31/2020

(7.53.1.12) Base year Scope 1 emissions covered by target (metric tons CO2e)

7037

(7.53.1.13) Base year Scope 2 emissions covered by target (metric tons CO2e)

495234

(7.53.1.14) Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)

1232301

(7.53.1.31) Base year total Scope 3 emissions covered by target (metric tons CO2e)

1232301.000

(7.53.1.32) Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

1734572.000

(7.53.1.33) Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

(7.53.1.34) Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

(7.53.1.35) Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)

100

(7.53.1.52) Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

100

(7.53.1.53) Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

(7.53.1.54) End date of target

01/08/2028

(7.53.1.55) Targeted reduction from base year (%)

33.6

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

1151755.808

(7.53.1.57) Scope 1 emissions in reporting year covered by target (metric tons CO2e)

11639

(7.53.1.58) Scope 2 emissions in reporting year covered by target (metric tons CO2e)

776502

(7.53.1.59) Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)

1755131

(7.53.1.76) Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)

1755131.000

(7.53.1.77) Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

2543272.000

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

-138.76

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

After surpassing our 2021 intensity-based target three years early, we set a near-term science-based target to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028, relative to 2020. This target is in line with science-based climate goals to limit the global temperature rise to 1.5 degrees Celsius above pre-industrial levels and has been approved by the Science Based Targets initiative (SBTi). Our 2028 absolute emissions reduction target is based on the Science Based Targets SBTi Target Setting Tool-v.2.0 "Absolute Contraction Approach".

(7.53.1.83) Target objective

After surpassing our 2021 intensity-based target three years early, we set a near-term science-based target to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028, relative to 2020. This target is in line with science-based climate goals to limit the global temperature rise to 1.5 degrees Celsius above pre-industrial levels and has been approved by the Science Based Targets initiative (SBTi). Our 2028 absolute emissions reduction target is based on the Science Based Targets SBTi Target Setting Tool-v.2.0 "Absolute Contraction Approach".

(7.53.1.84) Plan for achieving target, and progress made to the end of the reporting year

We have identified two possible paths to achieve our science-based target: 1) purchasing 100% renewable electricity in all manufacturing facilities by 2028; or 2) purchasing 100% renewable electricity in U.S. manufacturing facilities by 2026, purchasing 100% renewable electricity in India manufacturing facilities by 2028, and improving energy usage per watt produced by 30% by 2028, relative to 2020. Since 2020, we doubled our production and are on track to almost quadruple our production through 2026. The addition of new manufacturing plants in India and the United States has resulted in a 57% increase in our absolute scope 1 and scope 2 greenhouse gas emissions since 2020. First Solar is committed to driving down our carbon footprint. The products we manufacture directly contribute to climate mitigation and adaptation. Every year, First Solar products are displacing more than 7 times the amount of greenhouse gas emissions we emit through our global operations and supply chain. Nevertheless, we remain committed to reducing our operational impact.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 2

(7.53.1.1) Target reference number

Select from:

☑ Abs 2

(7.53.1.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.1.3) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.53.1.4) Target ambition

Select from:

☑ 1.5°C aligned

(7.53.1.5) Date target was set

01/05/2022

(7.53.1.6) Target coverage

Select from:

☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Hydrofluorocarbons (HFCs)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

☑ Scope 3

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.10) Scope 3 categories

Select all that apply

☑ Scope 3, Category 1 – Purchased goods and services

☑ Scope 3, Category 2 – Capital goods

☑ Scope 3, Category 3 – Fuel- and energy- related activities (not included in Scope 1 or 2)

(7.53.1.11) End date of base year

12/31/2020

(7.53.1.12) Base year Scope 1 emissions covered by target (metric tons CO2e)

7037

(7.53.1.13) Base year Scope 2 emissions covered by target (metric tons CO2e)

495234

(7.53.1.14) Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)

1232301

(7.53.1.15) Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)

295327

(7.53.1.16) Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)

139049

(7.53.1.31) Base year total Scope 3 emissions covered by target (metric tons CO2e)

1666677.000

(7.53.1.32) Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

2168948.000

(7.53.1.33) Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100.0

(7.53.1.34) Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100.0

(7.53.1.35) Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)

100

(7.53.1.36) Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)

100

(7.53.1.37) Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

100

(7.53.1.52) Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

100

(7.53.1.53) Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100.0

(7.53.1.54) End date of target

01/05/2050

(7.53.1.55) Targeted reduction from base year (%)

90

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

216894.800

(7.53.1.57) Scope 1 emissions in reporting year covered by target (metric tons CO2e)

11639

(7.53.1.58) Scope 2 emissions in reporting year covered by target (metric tons CO2e)

776502

(7.53.1.59) Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)

2347905

(7.53.1.60) Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)

983001

(7.53.1.61) Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)

180097

(7.53.1.76) Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)

3511003.000

(7.53.1.77) Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

4299144.000

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

-109.13

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

We committed to achieving net zero emissions by 2050 across scopes 1 and 2, in line with a 1.5C warming scenario. Our 2050 net zero target is based on the SBTi Net-Zero Tool (v.1.0.3). Our long-term GHG emissions reduction target has been assessed against the Science Based Targets initiative (SBTi) Net-Zero Standard and has been approved by SBTi.

(7.53.1.83) Target objective

We committed to achieving net zero emissions by 2050 across scopes 1 and 2, in line with a 1.5C warming scenario. Our 2050 net zero target is based on the SBTi Net-Zero Tool (v.1.0.3). Our long-term GHG emissions reduction target has been assessed against the Science Based Targets initiative (SBTi) Net-Zero Standard and has been approved by SBTi.

(7.53.1.84) Plan for achieving target, and progress made to the end of the reporting year

In the long-term, we aim to reduce our scope 1 and scope 2 emissions by 90% by increasing our energy efficiency by 30% and going 100% renewable electricity across our global operations. The residual 5% scope 1 emissions can be neutralized with high quality carbon offsets to get to Net Zero, in accordance with the SBTi's Net Zero Standards. Since 2020, we doubled our production and are on track to almost quadruple our production through 2026. The addition of new manufacturing plants in India and the United States has resulted in a 57% increase in our absolute scope 1 and scope 2 greenhouse gas emissions since 2020. First Solar is committed to driving down our carbon footprint. The products we manufacture directly contribute to climate mitigation and adaptation. Every year, First Solar products are displacing more than 7 times the amount of greenhouse gas emissions we emit through our global operations and supply chain. Nevertheless, we remain committed to reducing our operational impact.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

[Add row]

(7.53.2) Provide details of your emissions intensity targets and progress made against those targets.

Row 1

(7.53.2.1) Target reference number

Select from:

☑ Int 1

(7.53.2.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.2.3) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.53.2.4) Target ambition

Select from:

☑ 1.5°C aligned

(7.53.2.5) Date target was set

01/08/2022

(7.53.2.6) Target coverage

Select from:

☑ Organization-wide

(7.53.2.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)
☑ Hydrofluorocarbons (HFCs)

(7.53.2.8) Scopes

Select all that apply
☑ Scope 3

(7.53.2.10) Scope 3 categories

Select all that apply
☑ Category 1: Purchased goods and services

(7.53.2.11) Intensity metric

Select from:
☑ Other, please specify **:**Metric Tons CO2e per megawatt (MW) produced

(7.53.2.12) End date of base year

12/31/2020

(7.53.2.15) Intensity figure in base year for Scope 3, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

201.2

(7.53.2.32) Intensity figure in base year for total Scope 3 (metric tons CO2e per unit of activity)

201.2000000000

(7.53.2.33) Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

201.2000000000

(7.53.2.36) % of total base year emissions in Scope 3, Category 1: Purchased goods and services covered by this Scope 3, Category 1: Purchased goods and services intensity figure

100

(7.53.2.53) % of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this total Scope 3 intensity figure

100

(7.53.2.54) % of total base year emissions in all selected Scopes covered by this intensity figure

100

(7.53.2.55) End date of target

12/31/2028

(7.53.2.56) Targeted reduction from base year (%)

45

(7.53.2.57) Intensity figure at end date of target for all selected Scopes (metric tons CO2e per unit of activity)

110.6600000000

(7.53.2.59) % change anticipated in absolute Scope 3 emissions

46

(7.53.2.62) Intensity figure in reporting year for Scope 3, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

193

(7.53.2.79) Intensity figure in reporting year for total Scope 3 (metric tons CO2e per unit of activity)

193.0000000000

(7.53.2.80) Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

193.0000000000

(7.53.2.81) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.2.82) % of target achieved relative to base year

9.06

(7.53.2.83) Target status in reporting year

Select from:

☑ Underway

(7.53.2.85) Explain target coverage and identify any exclusions

As scope 3 value chain emissions account for more than 80% of our total emissions, we set a near-term target to reduce our scope 3 GHG emissions intensity from purchased goods and services by 45% per megawatt produced by 2028, relative to 2020.

(7.53.2.86) Target objective

Our 2028 Scope 3 target is based on the SBTi Net-Zero Tool (v.1.0.3). Our near-term target is in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels and has been approved by the SBTi.

(7.53.2.87) Plan for achieving target, and progress made to the end of the reporting year

We aim to achieve our targets by increasing the recycled content of our glass and aluminum materials, switching to lower carbon materials such as steel, and leveraging our suppliers' science-based targets. Since 2020, we doubled our production capacity which has resulted in a 57% increase in our absolute scope 1 and

scope 2 greenhouse gas emissions. While scope 3 emissions per MW from purchased goods and services decreased by 3% compared to 2020, scope 3 increased by 16% per MW when including capital goods and fuel- and energy-related activities.

(7.53.2.88) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 2

(7.53.2.1) Target reference number

Select from:

☑ Int 2

(7.53.2.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.2.3) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.53.2.4) Target ambition

Select from:

☑ 1.5°C aligned

(7.53.2.5) Date target was set

01/08/2022

(7.53.2.6) Target coverage

Select from:

☑ Organization-wide

(7.53.2.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Hydrofluorocarbons (HFCs)

(7.53.2.8) Scopes

Select all that apply

☑ Scope 3

(7.53.2.10) Scope 3 categories

Select all that apply

☑ Category 1: Purchased goods and services

☑ Category 2: Capital goods

☑ Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)

(7.53.2.11) Intensity metric

Select from:

☑ Other, please specify **:**Metric Tons CO2e per megawatt (MW) produced

(7.53.2.12) End date of base year

12/31/2020

(7.53.2.15) Intensity figure in base year for Scope 3, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

201.2

(7.53.2.16) Intensity figure in base year for Scope 3, Category 2: Capital goods (metric tons CO2e per unit of activity)

48.2

(7.53.2.17) Intensity figure in base year for Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e per unit of activity)

22.7

(7.53.2.32) Intensity figure in base year for total Scope 3 (metric tons CO2e per unit of activity)

272.1000000000

(7.53.2.33) Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

272.1000000000

(7.53.2.36) % of total base year emissions in Scope 3, Category 1: Purchased goods and services covered by this Scope 3, Category 1: Purchased goods and services intensity figure

100

(7.53.2.37) % of total base year emissions in Scope 3, Category 2: Capital goods covered by this Scope 3, Category 2: Capital goods intensity figure

100.0

(7.53.2.38) % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) covered by this Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) intensity figure

100.0

(7.53.2.53) % of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this total Scope 3 intensity figure

100

(7.53.2.54) % of total base year emissions in all selected Scopes covered by this intensity figure

100

(7.53.2.55) End date of target

12/31/2050

(7.53.2.56) Targeted reduction from base year (%)

97

(7.53.2.57) Intensity figure at end date of target for all selected Scopes (metric tons CO2e per unit of activity)

8.1630000000

(7.53.2.59) % change anticipated in absolute Scope 3 emissions

-89

(7.53.2.62) Intensity figure in reporting year for Scope 3, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

193

(7.53.2.63) Intensity figure in reporting year for Scope 3, Category 2: Capital goods (metric tons CO2e per unit of activity)

81

(7.53.2.64) Intensity figure in reporting year for Scope 3, Category 3: Fuel- and energy-related activities (metric tons CO2e per unit of activity)

15

(7.53.2.79) Intensity figure in reporting year for total Scope 3 (metric tons CO2e per unit of activity)

289.0000000000

(7.53.2.80) Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

289.0000000000

(7.53.2.81) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.2.82) % of target achieved relative to base year

-6.40

(7.53.2.83) Target status in reporting year

Select from:

☑ Underway

(7.53.2.85) Explain target coverage and identify any exclusions

As scope 3 value chain emissions account for more than 80% of our total emissions, we set a long-term target to reduce our scope 3 GHG emissions from purchased goods and services, capital goods, and fuel- and energy-related activities by 97% per MW produced by 2050, relative to 2020. When we set the target in 2022, these Scope 3 categories accounted for more than 95% of our Scope 3 emissions.

(7.53.2.86) Target objective

Our long-term target is in line with limiting the global temperature rise to 1.5 degrees Celsius above pre-industrial levels and has been approved by the SBTi.

(7.53.2.87) Plan for achieving target, and progress made to the end of the reporting year

We aim to achieve our targets by increasing the recycled content of our glass and aluminum materials, switching to lower carbon materials such as steel, and leveraging our suppliers' science-based targets. Scope 3 emissions from capital goods will decrease as our manufacturing capacity growth stabilizes in the long-term. ISince 2020, we doubled our production capacity which has resulted in a 57% increase in our absolute scope 1 and scope 2 greenhouse gas emissions. While scope 3 emissions per MW from purchased goods and services decreased by 3% compared to 2020, scope 3 increased by 16% per MW when including capital goods and fuel- and energy-related activities. We are in the process of expanding our PV manufacturing capacity and have increased our supply chain procurement as a result.

(7.53.2.88) Target derived using a sectoral decarbonization approach

Select from:

☑ No

[Add row]

(7.54) Did you have any other climate-related targets that were active in the reporting year?

Select all that apply

☑ Targets to increase or maintain low-carbon energy consumption or production

☑ Net-zero targets

(7.54.1) Provide details of your targets to increase or maintain low-carbon energy consumption or production.

Row 1

(7.54.1.1) Target reference number

Select from:

☑ Low 1

(7.54.1.2) Date target was set

01/01/2020

(7.54.1.3) Target coverage

Select from:

☑ Organization-wide

(7.54.1.4) Target type: energy carrier

Select from:

☑ Electricity

(7.54.1.5) Target type: activity

Select from:

☑ Consumption

(7.54.1.6) Target type: energy source

Select from:

☑ Renewable energy source(s) only

(7.54.1.7) End date of base year

12/31/2020

(7.54.1.8) Consumption or production of selected energy carrier in base year (MWh)

834804

(7.54.1.9) % share of low-carbon or renewable energy in base year

1

(7.54.1.10) End date of target

12/31/2023

(7.54.1.11) % share of low-carbon or renewable energy at end date of target

100

(7.54.1.12) % share of low-carbon or renewable energy in reporting year

1

(7.54.1.13) % of target achieved relative to base year

0.00

(7.54.1.14) Target status in reporting year

Select from:

☑ Underway

(7.54.1.16) Is this target part of an emissions target?

Yes. We set new science-based targets to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028 and achieve net zero emissions by 2050, relative to 2020. These targets are in line with science-based climate goals to limit the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. We aim to achieve this through increased energy efficiency, purchasing 100% renewable electricity across our U.S. operations by 2026, and purchasing 100% renewable electricity across our global operations by 2028 by working on enabling the offsite solar market in Malaysia and Vietnam, and purchasing bundled renewable energy credits (RECs) and offsets as a last resort.

(7.54.1.17) Is this target part of an overarching initiative?

Select all that apply

☑ RE100

☑ Science Based Targets initiative

(7.54.1.18) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.54.1.19) Explain target coverage and identify any exclusions

In 2020, we joined RE100 and committed to powering our global operations with 100% renewable electricity by 2028. We have installed onsite PV installations at our production sites in Ohio and Malaysia and at our recycling facility in Frankfurt Oder, Germany. We are now investigating opportunities to procure offsite solar electricity as part of our renewable energy strategy.

(7.54.1.20) Target objective

In 2020, we joined RE100 and committed to powering our global operations with 100% renewable electricity by 2028. We have installed onsite PV installations at our production sites in Ohio and Malaysia and at our recycling facility in Frankfurt Oder, Germany. We are now investigating opportunities to procure offsite solar electricity as part of our renewable energy strategy.

(7.54.1.21) Plan for achieving target, and progress made to the end of the reporting year

We aim to achieve this through increased energy efficiency, going 100% renewable across our U.S. operations by 2026, working on enabling the offsite solar market in Malaysia, Vietnam, and India, and purchasing bundled renewable energy credits (RECs) and offsets as a last resort. Although we have identified onsite and offsite solar opportunities that could power our Malaysian operations with up to 38% renewable electricity, achieving the 100% renewable energy goal in Malaysia and Vietnam by 2028 will remain a challenge due to the lack of offsite renewable energy options. While we remain committed to our global renewable energy goals and continue to work on enabling the offsite renewable energy market in Malaysia and Vietnam, we also continue to explore ways to achieve our near-term science-based target. As part of our renewable energy strategy, we are investigating opportunities to procure offsite solar electricity, install PV rooftop and carport arrays, and purchase bundled renewable energy credits (RECs). We are installing a 300kW PV carport array, which is expected to begin operating in 2023 at our second manufacturing facility in Ohio. We have installed onsite PV installations at our production sites in Ohio and Malaysia and at our recycling facility in Frankfurt Oder, Germany.

Row 3

(7.54.1.1) Target reference number

Select from:

☑ Low 2

(7.54.1.2) Date target was set

01/01/2020

(7.54.1.3) Target coverage

Select from:

☑ Organization-wide

(7.54.1.4) Target type: energy carrier

Select from:

☑ Electricity

(7.54.1.5) Target type: activity

Select from:

☑ Consumption

(7.54.1.6) Target type: energy source

Select from:

☑ Renewable energy source(s) only

(7.54.1.7) End date of base year

12/31/2020

(7.54.1.8) Consumption or production of selected energy carrier in base year (MWh)

263589.0

(7.54.1.9) % share of low-carbon or renewable energy in base year

1.0

(7.54.1.10) End date of target

12/31/2023

(7.54.1.11) % share of low-carbon or renewable energy at end date of target

100

(7.54.1.12) % share of low-carbon or renewable energy in reporting year

1

(7.54.1.13) % of target achieved relative to base year

0.00

(7.54.1.14) Target status in reporting year

Select from:

☑ Underway

(7.54.1.16) Is this target part of an emissions target?

Yes. We set new science-based targets to reduce our absolute scope 1 and scope 2 GHG emissions by 34% by 2028 and achieve net zero emissions by 2050, relative to 2020. These targets are in line with science-based climate goals to limit the global temperature rise to 1.5 degrees Celsius above pre-industrial levels. We aim to achieve this through increased energy efficiency, purchasing 100% renewable electricity across our U.S. operations by 2026, and purchasing 100% renewable electricity across our global operations by 2028 by working on enabling the offsite solar market in Malaysia and Vietnam, and purchasing bundled renewable energy credits (RECs) and offsets as a last resort.

(7.54.1.17) Is this target part of an overarching initiative?

Select all that apply

☑ RE100

☑ Science Based Targets initiative

(7.54.1.18) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.54.1.19) Explain target coverage and identify any exclusions

In 2020, we joined RE100 and committed to powering our global operations with 100% renewable electricity by 2028, with an interim goal of transitioning our facilities in the United States to 100% renewable electricity by 2026.

(7.54.1.20) Target objective

In 2020, we joined RE100 and committed to powering our global operations with 100% renewable electricity by 2028, with an interim goal of transitioning our facilities in the United States to 100% renewable electricity by 2026.

(7.54.1.21) Plan for achieving target, and progress made to the end of the reporting year

We aim to achieve this through increased energy efficiency and going 100% renewable across our U.S. operations by 2026. At the end of the reporting year, 1% of electricity consumption in U.S. operations was from renewable electricity through onsite solar arrays.
[Add row]

(7.54.3) Provide details of your net-zero target(s).

Row 1

(7.54.3.1) Target reference number

Select from:
☑ NZ1

(7.54.3.2) Date target was set

08/21/2021

(7.54.3.3) Target Coverage

Select from:
☑ Organization-wide

(7.54.3.4) Targets linked to this net zero target

Select all that apply
☑ Abs1
☑ Abs2

☑ Int1
☑ Int2

(7.54.3.5) End date of target for achieving net zero

01/05/2050

(7.54.3.6) Is this a science-based target?

Select from:
☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.54.3.7) Science Based Targets initiative official validation letter

First Solar SBTi Net-Zero Approval Letter Final.pdf

(7.54.3.8) Scopes

Select all that apply
☑ Scope 1
☑ Scope 2
☑ Scope 3

(7.54.3.9) Greenhouse gases covered by target

Select all that apply
☑ Carbon dioxide (CO2)
☑ Methane (CH4)
☑ Nitrous oxide (N2O)
☑ Hydrofluorocarbons (HFCs)

(7.54.3.10) Explain target coverage and identify any exclusions

First Solar committed to reaching net-zero GHG emissions across the value chain by 2050. This includes reducing our absolute scope 1 and scope 2 GHG emissions 34% by 2028 and 95% by 2050, from a 2020 base year. It also includes reducing Scope 3 GHG emissions from purchased goods and services by 45% per MW by 2028 and reducing Scope 3 GHG emissions from purchased goods and services, capital goods, and fuel- and energy-related activities by 97% per MW produced by 2050, relative to 2020.

(7.54.3.11) Target objective

Our 2050 net-zero target is based on the SBTi Net-Zero Tool (v.1.0.3). Our science-based net-zero target has been verified by SBTi.

(7.54.3.12) Do you intend to neutralize any residual emissions with permanent carbon removals at the end of the target?

Select from:

☑ Yes

(7.54.3.13) Do you plan to mitigate emissions beyond your value chain?

Select from:

☑ No, but we plan to within the next two years

(7.54.3.14) Do you intend to purchase and cancel carbon credits for neutralization and/or beyond value chain mitigation?

Select all that apply

☑ Yes, we plan to purchase and cancel carbon credits for neutralization at the end of the target

(7.54.3.15) Planned milestones and/or near-term investments for neutralization at the end of the target

We aim to achieve our science-based net-zero target by increasing the recycled content of our glass and aluminum materials, switching to lower-carbon materials such as steel, leveraging our suppliers' science-based targets, and executing our RE100 targets. The residual 5% of our Scope 1 emissions can be neutralized with high-quality carbon offsets to reach net-zero, in accordance with the SBTi's Net-Zero Standards. Scope 3 emissions from capital goods will decrease as our manufacturing capacity growth stabilizes in the long term. Additionally, we have installed onsite PV systems at our production sites in Ohio, Malaysia, Vietnam, and at our recycling facility in Frankfurt Oder, Germany, generating approximately 7.5 million kWh of solar electricity globally. We also installed a 300kW PV carport array, which began operating in 2023 at our second manufacturing facility in Ohio, and have added carports at our facilities in Vietnam and Malaysia. In November 2023, First Solar entered into a power purchase agreement with Cleantech Solar, a leading provider of renewable energy solutions in India and Southeast Asia. Under the agreement, Cleantech plans to construct certain PV solar (150 MWdc) and wind (16.8 MW) generating assets, which are expected to supply electricity to our manufacturing facility in India starting in Q4 2024. The power purchase agreement is expected to cover approximately 70% of our power needs in India.

(7.54.3.17) Target status in reporting year

Select from:

☑ Underway

(7.54.3.19) Process for reviewing target

At First Solar, we follow a structured process for reviewing our sustainability targets to ensure continuous progress toward our goals. We regularly monitor key performance indicators and collect data from all relevant sites on a quarterly basis. This data is reviewed by our sustainability and ESG teams, who provide updates to our executive leadership team for further evaluation. Our ESG Steering Committee, led by the CEO, oversees progress and meets biannually to ensure alignment with our long-term objectives. Additionally, our Board of Directors' Nominating and Governance Committee plays a critical role in overseeing our environmental targets, receiving updates on progress and ensuring that our targets are integrated with our overall business strategy. To ensure accountability, we engage independent third-party auditors to review our GHG Inventory. If we identify areas where we are not on track, we adjust our strategies and implement corrective actions to stay aligned with our goals.
[Add row]

(7.55) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Select from:

☑ Yes

(7.55.1) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	*0*	*`Numeric input*
To be implemented	*0*	*0*
Implementation commenced	*0*	*0*
Implemented	*3*	*7779*

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Not to be implemented	*0*	*`Numeric input*

[Fixed row]

(7.55.2) Provide details on the initiatives implemented in the reporting year in the table below.

Row 1

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes

☑ Other, please specify :Coater Quench Flow, Installing heat exchanger for CDA inlet of Air Dryers, Re-setting time schedule for mixing pump,

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

3573

(7.55.2.3) Scope(s) or Scope 3 category(ies) where emissions savings occur

Select all that apply

☑ Scope 2 (location-based)

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

(7.55.2.5) Annual monetary savings (unit currency – as specified in C0.4)

402265

(7.55.2.6) Investment required (unit currency – as specified in C0.4)

28432

(7.55.2.7) Payback period

Select from:

☑ 1-3 years

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ 3-5 years

(7.55.2.9) Comment

We implemented the following projects at our facility in Vietnam: 1. Quench fan project for Reducing the consumption of compressed dry air (CDA). 2. Installing heat exchanger for CDA inlet of Air Dryers 3. Replacing LED lighting in the canteen 4. Re-setting time schedule for mixing pump 5. Increase temperature in the facility 6. Install motion sensor in bathrooms

Row 2

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes

☑ Other, please specify **:**Air Quench VTD to reduce CDA Consumption (3 coaters), 460-470W Wattage Improvement (R2D2 (C3PO-2)), Increase and optimization of Donaldson Dryer dewpoint

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

3977

(7.55.2.3) Scope(s) or Scope 3 category(ies) where emissions savings occur

Select all that apply

☑ Scope 2 (location-based)

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

(7.55.2.5) Annual monetary savings (unit currency – as specified in C0.4)

744002

(7.55.2.6) Investment required (unit currency – as specified in C0.4)

0

(7.55.2.7) Payback period

Select from:

☑ 1-3 years

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ 3-5 years

(7.55.2.9) Comment

We implemented the following projects at our Malaysia facility: 1. Quench fan project for Reducing the consumption of compressed dry air (CDA). 2. Increase temperature in the facility 3. Panel Wattage improvement 4. Air Dryer dew point optimization

Row 3

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes

☑ Compressed air

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

229

(7.55.2.3) Scope(s) or Scope 3 category(ies) where emissions savings occur

Select all that apply

☑ Scope 2 (location-based)

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

(7.55.2.5) Annual monetary savings (unit currency – as specified in C0.4)

31000

(7.55.2.6) Investment required (unit currency – as specified in C0.4)

0

(7.55.2.7) Payback period

Select from:

☑ 1-3 years

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ 3-5 years

(7.55.2.9) Comment

We implemented the following project in Ohio 1. Implemented compressed air flow control valve to reduce false starts
[Add row]

(7.55.3) What methods do you use to drive investment in emissions reduction activities?

Row 1

(7.55.3.1) Method

Select from:
☑ Employee engagement

(7.55.3.2) Comment

We have engaged employees at the site and global level. We have a global facilities team working on defining priorities, identifying opportunities, and implementing energy conservation projects. This is also done at the site level in our manufacturing and research locations, where we have dedicated local teams. Our facilities teams are also rewarded for achieving our energy savings targets.

Row 3

(7.55.3.1) Method

Select from:
☑ Partnering with governments on technology development

(7.55.3.2) Comment

We have worked with local utilities to find and implement energy conservation projects. For example, we worked with Silicon Valley Power to identify opportunities to reduce our GHG emissions, energy consumption and energy costs at our Santa Clara office building.

Row 4

(7.55.3.1) Method

Select from:

☑ Lower return on investment (ROI) specification

(7.55.3.2) Comment

Although we do not have a specific ROI for energy conservation projects, we recognize that energy projects are low risk and this understanding of risk is integrated into our regular capital planning decisions.

Row 5

(7.55.3.1) Method

Select from:

☑ Dedicated budget for low-carbon product R&D

(7.55.3.2) Comment

Our product causes the greatest impact on GHG reduction. We have a dedicated Research and Development function whose sole purpose is to enhance the efficiency of our product and lower the cost of making it. These projects get a significant amount of First Solar's overall R&D spending.

Row 6

(7.55.3.1) Method

Select from:

☑ Financial optimization calculations

(7.55.3.2) Comment

Each project opportunity is evaluated for its payback, and external incentives are considered when calculating payback. Energy saving targets are established to reduce manufacturing costs.
[Add row]

(7.71) Does your organization assess the life cycle emissions of any of its products or services?

(7.71.1) Assessment of life cycle emissions

Select from:

☑ Yes

(7.71.2) Comment

We have environmental product declarations for our solar modules. In addition, we also have the global ecolabel EPEAT to assess and track the environmental performance of the our modules.
[Fixed row]

(7.71.1) Provide details of how your organization assesses the life cycle emissions of its products or services.

(7.71.1.1) Products/services assessed

Select from:

☑ All existing and new products/services

(7.71.1.2) Life cycle stage(s) most commonly covered

Select from:

☑ Cradle-to-grave

(7.71.1.3) Methodologies/standards/tools applied

Select all that apply

☑ EU Product Environmental Footprint (EUPEF)

☑ French Product Environmental Footprint

☑ ISO 14025
☑ ISO 14040 & 14044

(7.71.1.4) Comment

N/A
[Fixed row]

(7.73) Are you providing product level data for your organization’s goods or services?

Select from:
☑ Yes, I will provide data through the CDP questionnaire

(7.73.1) Give the overall percentage of total emissions, for all Scopes, that are covered by these products.

100

(7.73.2) Complete the following table for the goods/services for which you want to provide data.

Row 1

(7.73.2.1) Requesting member

Select from:

(7.73.2.2) Name of good/ service

Series 7 PV Module

(7.73.2.3) Description of good/ service

Thin film PV module

(7.73.2.4) Type of product

Select from:

☑ Final

(7.73.2.5) Unique product identifier

kilowatt peak (kWp)

(7.73.2.6) Total emissions in kg CO2e per unit

235

(7.73.2.7) ±% change from previous figure supplied

-12

(7.73.2.8) Date of previous figure supplied

07/26/2023

(7.73.2.9) Explanation of change

First Solar Series 7 product life cycle carbon footprint (https://www.epd-global.no/getfile.php/1345010-1695811928/EPDer/Byggevarer/NEPD-5039-4377_First-Solar-Series-7-Photovoltaic-Module.pdf) is approximately 12% lower than the Series 6 product life cycle carbon footprint (NEPD-2993-1671-EN: https://www.epd-norge.no/solcellepaneler-og-komponenter/series-6-photovoltaic-module-article3438-552.html). Taking the recycling benefits into account, the carbon footprint of Series 7 (P. Sinha, S. Sajja, T. W. Ooi, S. Jayaraman and S. Raju, "Net Zero Water Withdrawal Strategies and Multicriteria Impacts for PV Manufacturing," in IEEE Journal of Photovoltaics, vol. 14, no. 1, pp. 201-207, Jan. 2024, doi: 10.1109/JPHOTOV.2023.3323777) can be reduced by up to 22% compared to Series 6.

(7.73.2.10) Methods used to estimate lifecycle emissions

Select from:

☑ ISO 14025

Row 2

(7.73.2.1) Requesting member

Select from:

(7.73.2.2) Name of good/ service

Series 7 PV module

(7.73.2.3) Description of good/ service

Thin film PV module

(7.73.2.4) Type of product

Select from:

☑ Final

(7.73.2.5) Unique product identifier

kilowatt peak (kWp)

(7.73.2.6) Total emissions in kg CO2e per unit

235

(7.73.2.7) ±% change from previous figure supplied

-12

(7.73.2.8) Date of previous figure supplied

07/26/2023

(7.73.2.9) Explanation of change

First Solar Series 7 product life cycle carbon footprint (https://www.epd-global.no/getfile.php/1345010-1695811928/EPDer/Byggevarer/NEPD-5039-4377_First-Solar-Series-7-Photovoltaic-Module.pdf) is approximately 12% lower than the Series 6 product life cycle carbon footprint (NEPD-2993-1671-EN: https://www.epd-norge.no/solcellepaneler-og-komponenter/series-6-photovoltaic-module-article3438-552.html). Taking the recycling benefits into account, the carbon footprint of

Series 7 (P. Sinha, S. Sajja, T. W. Ooi, S. Jayaraman and S. Raju, "Net Zero Water Withdrawal Strategies and Multicriteria Impacts for PV Manufacturing," in IEEE Journal of Photovoltaics, vol. 14, no. 1, pp. 201-207, Jan. 2024, doi: 10.1109/JPHOTOV.2023.3323777) can be reduced by up to 22% compared to Series 6.

(7.73.2.10) Methods used to estimate lifecycle emissions

Select from:

☑ ISO 14025

Row 3

(7.73.2.1) Requesting member

Select from:

(7.73.2.2) Name of good/ service

Series 7 PV Module

(7.73.2.3) Description of good/ service

Thin film PV module

(7.73.2.4) Type of product

Select from:

☑ Final

(7.73.2.5) Unique product identifier

kilowatt peak (kWp)

(7.73.2.6) Total emissions in kg CO2e per unit

235

(7.73.2.7) ±% change from previous figure supplied

-12

(7.73.2.8) Date of previous figure supplied

07/26/2023

(7.73.2.9) Explanation of change

First Solar Series 7 product life cycle carbon footprint (https://www.epd-global.no/getfile.php/1345010-1695811928/EPDer/Byggevarer/NEPD-5039-4377_First-Solar-Series-7-Photovoltaic-Module.pdf) is approximately 12% lower than the Series 6 product life cycle carbon footprint (NEPD-2993-1671-EN: https://www.epd-norge.no/solcellepaneler-og-komponenter/series-6-photovoltaic-module-article3438-552.html). Taking the recycling benefits into account, the carbon footprint of Series 7 (P. Sinha, S. Sajja, T. W. Ooi, S. Jayaraman and S. Raju, "Net Zero Water Withdrawal Strategies and Multicriteria Impacts for PV Manufacturing," in IEEE Journal of Photovoltaics, vol. 14, no. 1, pp. 201-207, Jan. 2024, doi: 10.1109/JPHOTOV.2023.3323777) can be reduced by up to 22% compared to Series 6.

(7.73.2.10) Methods used to estimate lifecycle emissions

Select from:

☑ ISO 14025

[Add row]

(7.73.3) Complete the following table with data for lifecycle stages of your goods and/or services.

Row 1

(7.73.3.1) Requesting member

Select from:

(7.73.3.2) Name of good/ service

Series 7 PV Module

(7.73.3.3) Scope

Select from:

☑ Scope 1, 2 & 3

(7.73.3.4) Lifecycle stage

Select from:

☑ Cradle to gate

(7.73.3.5) Emissions at the lifecycle stage in kg CO2e per unit

235

(7.73.3.6) Lifecycle stage under your ownership or control

Select from:

☑ Yes

(7.73.3.7) Type of data used

Select from:

☑ Primary and secondary

(7.73.3.8) Data quality

Good to excellent based on pedigree matrix

(7.73.3.9) If applicable, describe the verification/assurance of the product emissions data

Verified by Right Environment, independent verifier approved by EPD Norge.

Row 2

(7.73.3.1) Requesting member

Select from:

(7.73.3.2) Name of good/ service

Series 7 PV Module

(7.73.3.3) Scope

Select from:

☑ Scope 1, 2 & 3

(7.73.3.4) Lifecycle stage

Select from:

☑ Cradle to gate

(7.73.3.5) Emissions at the lifecycle stage in kg CO2e per unit

235

(7.73.3.6) Lifecycle stage under your ownership or control

Select from:

☑ Yes

(7.73.3.7) Type of data used

Select from:

☑ Primary and secondary

(7.73.3.8) Data quality

Good to excellent based on pedigree matrix

(7.73.3.9) If applicable, describe the verification/assurance of the product emissions data

Verified by Right Environment, independent verifier approved by EPD Norge.

Row 3

(7.73.3.1) Requesting member

Select from:

(7.73.3.2) Name of good/ service

Series 7 PV Module

(7.73.3.3) Scope

Select from:
☑ Scope 1, 2 & 3

(7.73.3.4) Lifecycle stage

Select from:
☑ Cradle to gate

(7.73.3.5) Emissions at the lifecycle stage in kg CO2e per unit

235

(7.73.3.6) Lifecycle stage under your ownership or control

Select from:
☑ Yes

(7.73.3.7) Type of data used

Select from:
☑ Primary and secondary

(7.73.3.8) Data quality

Good to excellent based on pedigree matrix

(7.73.3.9) If applicable, describe the verification/assurance of the product emissions data

Verified by Right Environment, independent verifier approved by EPD Norge.
[Add row]

(7.73.4) Please detail emissions reduction initiatives completed or planned for this product.

Row 1

(7.73.4.1) Name of good/ service

PV Module

(7.73.4.2) Initiative ID

Select from:
☑ Initiative 1

(7.73.4.3) Description of initiative

Alternative frame material (steel) in Series 7 compared to aluminum in Series 6 Plus.

(7.73.4.4) Completed or planned

Select from:
☑ Completed

(7.73.4.5) Emission reductions in kg CO2e per unit

40
[Add row]

(7.73.5) Have any of the initiatives described in 7.73.4 been driven by requesting CDP Supply Chain members?

Select from:

☑ No

(7.74) Do you classify any of your existing goods and/or services as low-carbon products?

Select from:

☑ Yes

(7.74.1) Provide details of your products and/or services that you classify as low-carbon products.

Row 1

(7.74.1.1) Level of aggregation

Select from:

☑ Product or service

(7.74.1.2) Taxonomy used to classify product(s) or service(s) as low-carbon

Select from:

☑ The IEA Energy Technology Perspectives Clean Energy Technology Guide

(7.74.1.3) Type of product(s) or service(s)

Power

☑ Solar PV

(7.74.1.4) Description of product(s) or service(s)

Solar Photovoltaic, Thin-Film PV modules

(7.74.1.5) Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Select from:

☑ Yes

(7.74.1.6) Methodology used to calculate avoided emissions

Select from:

☑ Other, please specify **:**World Business Council for Sustainable Development’s Guidance on Avoided Emissions

(7.74.1.7) Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Select from:

☑ Cradle-to-grave

(7.74.1.8) Functional unit used

kWh

(7.74.1.9) Reference product/service or baseline scenario used

Whole average grid electricity

(7.74.1.10) Life cycle stage(s) covered for the reference product/service or baseline scenario

Select from:

☑ Use stage

(7.74.1.11) Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

7600000

(7.74.1.12) Explain your calculation of avoided emissions, including any assumptions

Avoided emissions are calculated by multiplying a) annual electricity production (in kWh) from PV modules manufactured in 2023, assuming worldwide average irradiance, by b) the worldwide average grid electricity emission factor (g CO2-eq/kWh), and converting to metric tons of CO2-eq. In 2023, First Solar produced 12.1 GW of PV modules, resulting in the avoidance of approximately 7.6 million metric tons of CO2e annually.

(7.74.1.13) Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

100
[Add row]

(7.79) Has your organization canceled any project-based carbon credits within the reporting year?

Select from:
☑ No

C9. Environmental performance - Water security

(9.1) Are there any exclusions from your disclosure of water-related data?

Select from:

☑ No

(9.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

Water withdrawals – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

We measure water withdrawals on a monthly basis using water meters and/or water utility bills.

(9.2.4) Please explain

We measure and monitor 100% of our total withdrawals from our manufacturing, recycling, and research and development facilities on a monthly basis based on water meters and/or water utility bills. Our property manager estimates water usage at the Mesa testing facility based on square footage since water bills are not broken down by tenants. Our Mesa test site accounts for less than 1% of our total water withdrawals.

Water withdrawals – volumes by source

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

We measure water withdrawals by source on a monthly basis using water meters/or water utility bills.

(9.2.4) Please explain

We regularly monitor and measure 100% of the total water withdrawals of our manufacturing, recycling, and research and development facilities based on monthly water utility bills. All withdrawals come from the local municipal supplier (third-party/ freshwater).

Water withdrawals quality

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

We measure the water quality using the vendor testing results on a monthly basis. In Malaysia, we send our samples to a third-party accredited laboratory for analysis, yearly and/or as often as needed.

(9.2.4) Please explain

We regularly monitor and measure 100% of our water quality by standard parameters as well as for heavy metals. First Solar factories are equipped with state-of-the-art analytical capabilities for in-house wastewater testing.

Water discharges – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure water discharges by total volumes continuously using water meters. The destination of the wastewater is known for all sites.

(9.2.4) Please explain

We regularly monitor and measure 100% of the water discharges of our manufacturing, recycling, and research and development facilities.

Water discharges – volumes by destination

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure water discharge volumes by destination continuously using water meters.

(9.2.4) Please explain

We regularly monitor and measure 100% of the water discharges by destination of our manufacturing, recycling, and research and development facilities. In 2022, approximately 69% of our wastewater was sent to a third-party (municipal wastewater facility) and approximately 31% was discharged directly to fresh surface water (river).

Water discharges – volumes by treatment method

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure water discharges by treatment method continuously using water meters.

(9.2.4) Please explain

We regularly monitor and measure 100% of our total water discharge volumes by treatment method. No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant.

Water discharge quality – by standard effluent parameters

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure our water discharge quality by standard effluent parameters continuously though our in-house lab/ or weekly through a third-party party accredited laboratory.

(9.2.4) Please explain

We regularly monitor and measure 100% of our water discharge quality by standard effluent parameters as well as for heavy metals from our manufacturing sites which represent 99.9% of our total wastewater discharge in 2022. First Solar factories are equipped with state-of-the-art analytical capabilities for in-house wastewater testing.

Water discharge quality – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure our water discharge quality for any emissions to water continuously though our in-house lab/ or weekly through a third-party party accredited laboratory.

(9.2.4) Please explain

We regularly monitor and measure 100% of our water discharge quality by standard effluent parameters as well as for heavy metals from our manufacturing sites which represent 99.9% of our total wastewater discharge in 2022. First Solar factories are equipped with state-of-the-art analytical capabilities for in-house wastewater testing.

Water discharge quality – temperature

(9.2.1) % of sites/facilities/operations

Select from:

☑ Not relevant

(9.2.4) Please explain

We do not have any high temperature inducing processes in wastewater. This is not anticipated to change or be relevant in the future. However, we still monitor our water discharge quality for temperature on a weekly basis through a third-party accredited laboratory.

Water consumption – total volume

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure our water consumption volumes continuously using water meters.

(9.2.4) Please explain

Approximately 56% of our total water withdrawals (3,149megaliters) was consumed during operation and used for irrigation, cooling towers, sanitary purposes, or recycled in 2022. We are able to estimate water consumption by subtracting total water discharges from total water withdrawals: 3,149 megaliters-1,373 megaliters 1,776 megaliters consumed.

Water recycled/reused

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

We measure our recycled/reused water continuously using water meters.

(9.2.4) Please explain

We measure the amount of water recycled at our manufacturing and recycling facilities in Malaysia, Ohio, Vietnam, Germany, and India, which represented 99.9% of our water withdrawals in 2023. We recycled approximately 317 megaliters (or about 8% of our total water withdrawals) across our operations in 2023.

The provision of fully-functioning, safely managed WASH services to all workers

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

Our drinking water dispensers are quality-tested and maintained by a third-party.

(9.2.4) Please explain

100% of our facilities provide fully functioning, safely managed WASH services to all workers. Our total water withdrawal data includes sanitary water use at our manufacturing and recycling facilities.
[Fixed row]

(9.2.2) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, how do they compare to the previous reporting year, and how are they forecasted to change?

Total withdrawals

(9.2.2.1) Volume (megaliters/year)

3859

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ Much higher

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Higher

(9.2.2.5) Primary reason for forecast

Select from:

☑ Investment in water-smart technology/process

(9.2.2.6) Please explain

Our threshold for "much higher" is defined as any increase above 20%. While our production increased by 33% in 2022, our absolute water withdrawals increased by approximately 23% and our manufacturing water intensity decreased by 6% due to increased water recycling initiatives. In total, we recycled 318 million liters of water in 2023, equivalent to approximately 8% of our absolute water use and representing an 88% increase in water recycling compared to 2022. We expect water withdrawals to increase over the next 5 years as we continue to expand our manufacturing footprint. Our threshold for "lower" is defined as any decrease up to 20%. Since 2020, we doubled our production and are on track to almost quadruple our production through 2026.

Total discharges

(9.2.2.1) Volume (megaliters/year)

1701

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ Much higher

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Higher

(9.2.2.5) Primary reason for forecast

Select from:

☑ Investment in water-smart technology/process

(9.2.2.6) Please explain

In 2023, approximately 44% of First Solar's total water withdrawals (1,701 megaliters) was discharged as wastewater from our industrial wastewater treatment systems. This represents a 24% increase from 2022 (1373 megaliters) due to the 33% increase in production. Our threshold for "much higher" is defined as any increase above 20%. Approximately 76% of our wastewater was sent to a third party (municipal wastewater facilities) and approximately 24% was discharged directly to fresh surface water (river). Our threshold for "lower" is defined as any decrease up to 20%. We expect wastewater discharges to increase over the next 5 years as we continue to expand our manufacturing footprint. Since 2020, we doubled our production and are on track to almost quadruple our production through 2026.

Total consumption

(9.2.2.1) Volume (megaliters/year)

2158

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ Much higher

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Higher

(9.2.2.5) Primary reason for forecast

Select from:

☑ Increase/decrease in business activity

(9.2.2.6) Please explain

Total water consumption increased by approximately 22% in 2023, rising from 1,776 megaliters in 2022 to 2,158 megaliters in 2023. Our threshold for "much higher" is defined as any increase above 20%. Water consumption is expected to continue increasing over the next five years due to increased production and the addition of new manufacturing facilities. In 2023, we expanded manufacturing capacity, mobilized at our latest announced facility in Louisiana, produced and shipped a record volume of modules, expanded our contracted backlog to historic levels, increased R&D investment, and continued to evolve our technology and product roadmap. From a manufacturing perspective, we produced a record 12.1 GW in 2023, representing a 33% increase in production over 2022, while exiting the year with 16.6 GW of nameplate capacity, a new record for the company. Since 2020, we doubled our production and are on track to almost quadruple our production through 2026. [Fixed row]

(9.2.4) Indicate whether water is withdrawn from areas with water stress, provide the volume, how it compares with the previous reporting year, and how it is forecasted to change.

(9.2.4.1) Withdrawals are from areas with water stress

Select from:

☑ Yes

(9.2.4.2) Volume withdrawn from areas with water stress (megaliters)

325

(9.2.4.3) Comparison with previous reporting year

Select from:

☑ Much higher

(9.2.4.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.4.5) Five-year forecast

Select from:

☑ About the same

(9.2.4.6) Primary reason for forecast

Select from:

☑ Investment in water-smart technology/process

(9.2.4.7) % of total withdrawals that are withdrawn from areas with water stress

8.42

(9.2.4.8) Identification tool

Select all that apply

☑ WWF Water Risk Filter

(9.2.4.9) Please explain

In 2023, 8% of our water withdrawals came from water-stressed areas, compared to 0.02% in 2022. We used the WWF Risk Filter Tool and defined stressed areas as having baseline water stress that is equal to or greater than 'High': 40-80%. In 2022, our Mesa, Arizona test site was the only location classified as water-stressed. Our threshold for "much higher" is defined as any increase of more than 20%. In 2023, our first manufacturing facility near Chennai in Tamil Nadu, India, began operations and faces high baseline water stress. To minimize impacts on local water resources, we operate a Net Zero Water Withdrawal PV manufacturing 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. Instead of being discharged, the wastewater is treated onsite and converted into freshwater so it can be reused in our operations. Since the water for this facility is not derived from fresh surface or groundwater sources, we have selected the "about the same" option for this location in our water risk evaluation. We evaluate the percentage of sites operating in water-stressed areas based on the baseline water stress of our site locations.
[Fixed row]

(9.2.7) Provide total water withdrawal data by source.

Fresh surface water, including rainwater, water from wetlands, rivers, and lakes

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Not relevant. All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future.

Brackish surface water/Seawater

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Not relevant. All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future.

Groundwater – renewable

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Not relevant. All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future.

Groundwater – non-renewable

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Not relevant. All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future.

Produced/Entrained water

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Not relevant. All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future.

Third party sources

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

3859

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ Higher

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.7.5) Please explain

All withdrawals come from local municipal suppliers (third-party/freshwater or wastewater). No change from last year. No changes are expected in the future. In 2023, we expanded our production capacity with increased output and the launch of new manufacturing facilities.
[Fixed row]

(9.2.8) Provide total water discharge data by destination.

Fresh surface water

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

410

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ Lower

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.8.5) Please explain

In 2023, approximately 410 megaliters (or 24% of our total wastewater) were discharged to fresh surface water (river) while 76% of our wastewater was sent to a third party (municipal wastewater facilities). 410/1701 24%

Brackish surface water/seawater

(9.2.8.1) Relevance

Select from:

☑ Not relevant

(9.2.8.5) Please explain

On-site treated industrial wastewater is either indirectly discharged to sanitary sewer in the United States and Vietnam, or directly discharged to river in Malaysia. Our operations do not discharge wastewater to brackish surface water or seawater. No change from 2021 and no change is expected in the future.

Groundwater

(9.2.8.1) Relevance

Select from:

☑ Not relevant

(9.2.8.5) Please explain

On-site treated industrial wastewater is either indirectly discharged to sanitary sewer in the United States and Vietnam, or directly discharged to river in Malaysia. Our operations do not discharge wastewater to brackish surface water or seawater. No change from 2021 and no change is expected in the future.

Third-party destinations

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

1291

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ Higher

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.8.5) Please explain

In 2023, approximately 1291 megaliters (or 76% of our wastewater) was sent to a third party (municipal wastewater facilities). 1291/170176%
[Fixed row]

(9.2.9) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

Tertiary treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Relevant

(9.2.9.2) Volume (megaliters/year)

1701

(9.2.9.3) Comparison of treated volume with previous reporting year

Select from:

☑ Much higher

(9.2.9.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.9.5) % of your sites/facilities/operations this volume applies to

Select from:

☑ 100%

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment. We treat wastewater at our manufacturing and recycling facilities using a batch discharge system. Once treated, the water is collected in holding tanks, which are sampled and tested to confirm with regulatory limits before being discharged. No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant. If the water contaminant levels are above the permitted discharge limit, it is sent for re-treatment internally. Our threshold for "much higher" is defined as any increase of over 20%. In 2022, we wastewater discharges amounted to 1,373 megaliters compared to 1,701 megaliters in 2023. The amount of wastewater we treated was 24% higher in 2023 as our wastewater generation increased due to our growing (33% increase) production capacity.

Secondary treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment.

Primary treatment only

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment.

Discharge to the natural environment without treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment.

Discharge to a third party without treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment.

Other

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

100% of our wastewater goes through tertiary treatment.
[Fixed row]

(9.2.10) Provide details of your organization's emissions of nitrates, phosphates, pesticides, and other priority substances to water in the reporting year.

(9.2.10.1) Emissions to water in the reporting year (metric tons)

0.01

(9.2.10.2) Categories of substances included

Select all that apply

☑ Priority substances listed under the EU Water Framework Directive

(9.2.10.3) List the specific substances included

Cadmium

(9.2.10.4) Please explain

Wastewater is treated on-site and tested to confirm compliance to permit limits before discharging. First Solar's wastewater treatment process flow includes operations like metals precipitation, filtration and ion exchange polishing. A continuous checking is performed of the Cd content in the water before it is approved for discharge. If the wastewater is out of specifications, it is re-circulated through the wastewater treatment system. These processes reduce Cd levels in wastewater at all First Solar manufacturing facilities. No industrial wastewater leaves our site unless we have tested and approved it for discharge, even if it is being discharged to a municipal wastewater treatment plant. If the water contaminant levels are above the permitted discharge limit, the wastewater is sent for re-treatment internally.

[Fixed row]

(9.3) In your direct operations and upstream value chain, what is the number of facilities where you have identified substantive water-related dependencies, impacts, risks, and opportunities?

Direct operations

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ Yes, we have assessed this value chain stage and identified facilities with water-related dependencies, impacts, risks, and opportunities

(9.3.2) Total number of facilities identified

4

(9.3.3) % of facilities in direct operations that this represents

Select from:

☑ 26-50

(9.3.4) Please explain

First Solar's PV modules are currently produced at our facilities in Ohio, Malaysia, Vietnam, and the newly operational facility in India. These four locations are exposed to water risks with the potential to have a substantive financial impact on our business. Damage or disruption at these key manufacturing sites could impact our business operations and affect our ability to generate net sales. First Solar also operates a recycling facility in Germany and research and development facilities in the U.S. and Sweden, but the water risks at these locations are not considered financially significant. In 2023, our nameplate capacities were 3.2 GWDC in India, 5.6 GWDC in Malaysia, 5.4 GWDC in Vietnam, and 4.4 GWDC in Ohio, totaling a record 16.6 GW globally.

Upstream value chain

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ Yes, we have assessed this value chain stage and identified facilities with water-related dependencies, impacts, risks, and opportunities

(9.3.2) Total number of facilities identified

26

(9.3.4) Please explain

We leverage third-party tools and indices on global slavery, forced labor, and other environmental, social, and governance (ESG) factors to identify high-risk suppliers based on industry, geography, and spend. Water-related aspects evaluated as part of the environmental assessment include flood risk, water stress, wastewater management, and access to drinking water and sanitation. These factors contribute to the overall environmental score in the risk assessment. The threshold for a substantive impact on water security is a high-spend supplier with a "high" or "extremely high" score on the World Resources Institute's Water Stress Index. We identified 26 high spend suppliers that are high risk on the Water Stress Index.
[Fixed row]

(9.3.1) For each facility referenced in 9.3, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Row 1

(9.3.1.1) Facility reference number

Select from:
☑ Facility 1

(9.3.1.2) Facility name (optional)

Perrysburg

(9.3.1.3) Value chain stage

Select from:
☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Canada

☑ St. Lawrence

(9.3.1.8) Latitude

41.557058

(9.3.1.9) Longitude

-83.552515

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

1291

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ Higher

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

1291

(9.3.1.21) Total water discharges at this facility (megaliters)

660

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ Higher

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

660

(9.3.1.27) Total water consumption at this facility (megaliters)

630

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:
☑ Higher

(9.3.1.29) Please explain

As a result of an increase in production, our water discharge increased in 2023 as compared to 2022. Our threshold for "higher" is for increases of up to 20%.

Row 3

(9.3.1.1) Facility reference number

Select from:

☑ Facility 2

(9.3.1.2) Facility name (optional)

Kulim

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Malaysia

☑ Other, please specify **:**Muda River

(9.3.1.8) Latitude

5.428624

(9.3.1.9) Longitude

100.572598

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

1102

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ Lower

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

1102

(9.3.1.21) Total water discharges at this facility (megaliters)

410

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ Lower

(9.3.1.23) Discharges to fresh surface water

410

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

0

(9.3.1.27) Total water consumption at this facility (megaliters)

691

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ Lower

(9.3.1.29) Please explain

KLM reduced its water consumption in 2023, using 1,101 megaliters compared to 1,298 megaliters in 2022, demonstrating enhanced water efficiency. Additionally, KLM increased its water recycling efforts, reclaiming 146 megaliters in 2023, up from 132 megaliters in the previous year.

Row 4

(9.3.1.1) Facility reference number

Select from:

☑ Facility 3

(9.3.1.2) Facility name (optional)

Dong Nam

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Viet Nam

☑ Saigon

(9.3.1.8) Latitude

10.77653

(9.3.1.9) Longitude

106.70098

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

1138

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ Higher

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

1138

(9.3.1.21) Total water discharges at this facility (megaliters)

630

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ Higher

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

630

(9.3.1.27) Total water consumption at this facility (megaliters)

508

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:
☑ About the same

(9.3.1.29) Please explain

As a result of an increase in production, our water discharge increased in 2023 as compared to 2022. Our threshold for "higher" is for increases of up to 20%.

Row 5

(9.3.1.1) Facility reference number

Select from:
☑ Facility 4

(9.3.1.2) Facility name (optional)

Chennai

(9.3.1.3) Value chain stage

Select from:
☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

India

☑ Other, please specify :Chembarabakkam Lake

(9.3.1.8) Latitude

12.957376

(9.3.1.9) Longitude

79.97423

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

324

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ This is our first year of measurement

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

324

(9.3.1.21) Total water discharges at this facility (megaliters)

0

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ This is our first year of measurement

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

0

(9.3.1.27) Total water consumption at this facility (megaliters)

324

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ This is our first year of measurement

(9.3.1.29) Please explain

Production commenced at this facility in September 2023. To minimize impacts on local water resources, 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. Instead of being discharged, the wastewater is treated onsite and converted into freshwater so it can be reused in our operations.
[Add row]

(9.3.2) For the facilities in your direct operations referenced in 9.3.1, what proportion of water accounting data has been third party verified?

Water withdrawals – total volumes

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water withdrawals – volume by source

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water withdrawals – quality by standard water quality parameters

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water discharges – total volumes

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water discharges – volume by destination

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water discharges – volume by final treatment level

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water discharges – quality by standard water quality parameters

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.

Water consumption – total volume

(9.3.2.1) % verified

Select from:

☑ Not verified

(9.3.2.3) Please explain

We have not verified our water accounting data for cost reasons but may plan do so within the next two years.
[Fixed row]

(9.4) Could any of your facilities reported in 9.3.1 have an impact on a requesting CDP supply chain member?

Select from:

☑ We do not have this data but we intend to collect it within two years

(9.5) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue (currency)	Total water withdrawal efficiency	Anticipated forward trend
	3318602000	*859964.24*	*Our total water withdrawal efficiency is expected to improve in 2024 with increased throughput and manufacturing efficiency improvements.*

[Fixed row]

(9.12) Provide any available water intensity values for your organization’s products or services.

Row 1

(9.12.1) Product name

Solar Panels

(9.12.2) Water intensity value

0.31

(9.12.3) Numerator: Water aspect

Select from:

☑ Water withdrawn

(9.12.4) Denominator

Per Watt Produced

(9.12.5) Comment

At First Solar, we have significantly reduced our water intensity over the years. Since 2009, we’ve decreased our manufacturing water intensity (water consumption per watt produced) by approximately 84%, thanks to improvements in module efficiency, manufacturing throughput, and water conservation initiatives. By 2023, our water intensity stood at 0.31 liters per watt produced, and we’ve set an ambitious target to lower this to 0.25 liters per watt by 2028. We are also acutely aware of the water risks in the regions where we operate, and we closely monitor our water withdrawals. In 2023, we recycled 318 million liters of water, an 88% increase compared to 2022. This effort aligns with standardized methodologies like ISO 14046, which guide our approach to minimizing water use, especially in areas facing water stress. Through these actions, we aim to reduce the water footprint of our products, particularly in regions exposed to water risks related to access or scarcity.
[Add row]

(9.13) Do any of your products contain substances classified as hazardous by a regulatory authority?

	Products contain hazardous substances
	Select from: ☑ Yes

[Fixed row]

(9.13.1) What percentage of your company's revenue is associated with products containing substances classified as hazardous by a regulatory authority?

Row 1

(9.13.1.1) Regulatory classification of hazardous substances

Select from:

☑ Other, please specify :GHS Classification

(9.13.1.2) % of revenue associated with products containing substances in this list

Select from:

☑ More than 80%

(9.13.1.3) Please explain

Our solar modules contain CdTe and other semiconductor materials. Elemental cadmium and certain of its compounds are regulated as hazardous materials due to the adverse health effects that may arise from human exposure. Based on existing research, the risks of exposure to CdTe are not believed to be as serious as those relating to exposure to elemental cadmium due to CdTe's limited bioavailability. As of 2023, over 100% of our revenue is associated with products containing CdTe. First Solar Series 6, Series 6 Plus 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: June 10, 2022) above 0.1% by weight per article. More than 50 researchers from leading international institutions have confirmed the environmental benefits and safety of First Solar's thin film PV technology over its entire lifecycle; during normal operation, during foreseeable accidents such as fire or breakage, and through end-of-life recycling and disposal.
[Add row]

(9.14) Do you classify any of your current products and/or services as low water impact?

(9.14.1) Products and/or services classified as low water impact

Select from:

☑ Yes

(9.14.2) Definition used to classify low water impact

Unlike thermal electric power plants and concentrated solar power, solar PV does not require any water to generate electricity during operation and is ideally suited to meet the growing energy and water needs of arid, water-limited regions. The definition used to classify low water impact is based on the life cycle water use compared to conventional energy sources and other solar technologies. Due to our resource-efficient manufacturing process, First Solar modules have the lowest carbon and water footprint and fastest energy payback time in the industry. We are continuously working to drive down the environmental footprint of our modules. First Solar's next generation Series 7 modules have a water footprint that is nearly 4 times lower than conventional crystalline silicon solar panels on a life cycle basis.First Solar conducted a lifecycle water assessment of our thin film PV technology which concluded that the life cycle water withdrawal of cadmium telluride (CdTe) PV ranges from approximately 382– 425 L/MWh. (Source: Sinha, Meader and de Wild-Scholten, Life Cycle Water Usage in CdTe Photovoltaics, IEEE, Journal of Photovoltaics, 2012) Direct onsite water use represents only 12% of CdTe PV's lifecycle water withdrawal. The remainder is related to indirect water withdrawal from the use of grid electricity and raw materials throughout the product life cycle. Primary contributors to life cycle water withdrawal in our supply chain include the use of grid electricity, glass, steel and copper production, chemical use, and transport during take-back and recycling.

(9.14.4) Please explain

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, using less energy, water and semiconductor material than conventional crystalline silicon PV manufacturing. In about 4 hours, a sheet of glass is transformed into a complete PV module — flash tested, packaged and ready for shipment. Due to our resource-efficient manufacturing process, First Solar modules have a water footprint that is up to three times lower than conventional crystalline silicon solar panels on a life cycle basis.
[Fixed row]

(9.15) Do you have any water-related targets?

Select from:

☑ Yes

(9.15.1) Indicate whether you have targets relating to water pollution, water withdrawals, WASH, or other water-related categories.

	Target set in this category	Please explain
Water pollution	*Select from:* ☑ Yes	*Rich text input [must be under 1000 characters]*
Water withdrawals	*Select from:* ☑ Yes	*Rich text input [must be under 1000 characters]*
Water, Sanitation, and Hygiene (WASH) services	*Select from:* ☑ No, and we do not plan to within the next two years	*First Solar already provides access to clean drinking water at all of our manufacturing, recycling, R&D and office locations*
Other	*Select from:* ☑ Yes	*Rich text input [must be under 1000 characters]*

[Fixed row]

(9.15.2) Provide details of your water-related targets and the progress made.

Row 1

(9.15.2.1) Target reference number

Select from:

☑ Target 1

(9.15.2.2) Target coverage

Select from:

☑ Organization-wide (direct operations only)

(9.15.2.3) Category of target & Quantitative metric

Product water intensity

☑ Reduction per unit of production

(9.15.2.4) Date target was set

01/01/2017

(9.15.2.5) End date of base year

01/01/2009

(9.15.2.6) Base year figure

1.9

(9.15.2.7) End date of target year

01/01/2028

(9.15.2.8) Target year figure

1.57

(9.15.2.9) Reporting year figure

0.31

(9.15.2.10) Target status in reporting year

Select from:

☑ Achieved

(9.15.2.11) % of target achieved relative to base year

482

(9.15.2.12) Global environmental treaties/initiatives/ frameworks aligned with or supported by this target

Select all that apply

☑ Other, please specify **:**ISO 14046, EPEAT for PV Modules and Inverters

(9.15.2.13) Explain target coverage and identify any exclusions

In 2023, First Solar's manufacturing water intensity continued to improve, decreasing by approximately 6% compared to 2022. This reduction is largely due to increased water recycling initiatives, including the recycling of 318 million liters of water in 2023, representing an 88% increase over the previous year. Our target remains to reduce water intensity to 0.25 liters per watt by 2028, which equates to an 87% reduction from our 2009 baseline. This target aligns with the manufacturing water efficiency criterion of the EPEAT ecolabel for PV modules and inverters, and we remain on track to achieve it.

(9.15.2.15) Actions which contributed most to achieving or maintaining this target

In 2023, First Solar's manufacturing water intensity continued to improve, decreasing by approximately 6% compared to 2022. This reduction is largely due to increased water recycling initiatives, including the recycling of 318 million liters of water in 2023, representing an 88% increase over the previous year. Our target remains to reduce water intensity to 0.25 liters per watt by 2028, which equates to an 87% reduction from our 2009 baseline. This target aligns with the manufacturing water efficiency criterion of the EPEAT ecolabel for PV modules and inverters, and we remain on track to achieve it.

(9.15.2.16) Further details of target

In 2023, First Solar's manufacturing water intensity continued to improve, decreasing by approximately 6% compared to 2022. This reduction is largely due to increased water recycling initiatives, including the recycling of 318 million liters of water in 2023, representing an 88% increase over the previous year. Our target remains to reduce water intensity to 0.25 liters per watt by 2028, which equates to an 87% reduction from our 2009 baseline. This target aligns with the manufacturing water efficiency criterion of the EPEAT ecolabel for PV modules and inverters, and we remain on track to achieve it.

Row 2

(9.15.2.1) Target reference number

Select from:

☑ Target 2

(9.15.2.2) Target coverage

Select from:

☑ Organization-wide (direct operations only)

(9.15.2.3) Category of target & Quantitative metric

Product water intensity

☑ Reduction per unit of production

(9.15.2.4) Date target was set

01/01/2021

(9.15.2.5) End date of base year

01/01/2020

(9.15.2.6) Base year figure

0.6

(9.15.2.7) End date of target year

01/01/2028

(9.15.2.8) Target year figure

0.25

(9.15.2.9) Reporting year figure

0.31

(9.15.2.10) Target status in reporting year

Select from:

☑ Underway

(9.15.2.11) % of target achieved relative to base year

83

(9.15.2.12) Global environmental treaties/initiatives/ frameworks aligned with or supported by this target

Select all that apply

☑ Other, please specify :ISO 14046, EPEAT for PV Modules and Inverters

(9.15.2.13) Explain target coverage and identify any exclusions

In 2021, we set a water intensity target of 0.25 liters per watt by 2028, which is equivalent to a 58% reduction compared to our 2020 baseline. While our production increased by 33% in 2022, our absolute water withdrawals increased by approximately 23% and our manufacturing water intensity decreased by 6% due to increased water recycling initiatives. We continue to focus on water recycling and efficiency improvements across all our manufacturing facilities.

(9.15.2.14) Plan for achieving target, and progress made to the end of the reporting year

We aim to achieve an 87% reduction in global water usage per watt produced by 2028 from our 2009 baseline (or 58% reduction from a 2020 baseline). Since 2020, we have reduced our manufacturing water intensity by 48%. In 2023, our manufacturing water intensity decreased by 6% compared to 2022, due to increased water recycling initiatives. We recycled 318 million liters of water in 2023, an 88% increase in water recycling compared to 2022.

(9.15.2.16) Further details of target

Having surpassed our 71% reduction target ahead of schedule, we set a new target in 2021 to achieve a water intensity of 0.25 liters per watt by 2028, representing an 87% reduction from our 2009 baseline, or 58% reduction from a 2020 baseline. By the end of 2023, First Solar had reduced its water intensity by approximately 84%, from 1.9 liters per watt in 2009 to 0.31 liters per watt. We continue to focus on water recycling and efficiency improvements across all our manufacturing facilities.
[Add row]

C10. Environmental performance - Plastics

(10.1) Do you have plastics-related targets, and if so what type?

	Targets in place	Please explain
	Select from: ☑ No, and we do not plan to within the next two years	*We are not a major plastic user or producer. The only two resin-based products in our solar modules are the interlayer and junction box.*

[Fixed row]

(10.2) Indicate whether your organization engages in the following activities.

Production/commercialization of plastic polymers (including plastic converters)

(10.2.1) Activity applies

Select from:
☑ No

(10.2.2) Comment

not applicable

Production/commercialization of durable plastic goods and/or components (including mixed materials)

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Usage of durable plastics goods and/or components (including mixed materials)

(10.2.1) Activity applies

Select from:

☑ Yes

(10.2.2) Comment

The only two resin-based products in our solar modules are the interlayer and junction box.

Production/commercialization of plastic packaging

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Production/commercialization of goods/products packaged in plastics

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Provision/commercialization of services that use plastic packaging (e.g., food services)

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Provision of waste management and/or water management services

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Provision of financial products and/or services for plastics-related activities

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable

Other activities not specified

(10.2.1) Activity applies

Select from:

☑ No

(10.2.2) Comment

not applicable
[Fixed row]

(10.4) Provide the total weight of plastic durable goods and durable components produced, sold and/or used, and indicate the raw material content.

Durable goods and durable components used

(10.4.1) Total weight during the reporting year (Metric tons)

25580

(10.4.2) Raw material content percentages available to report

Select all that apply

☑ % virgin fossil-based content

(10.4.3) % virgin fossil-based content

100

(10.4.7) Please explain

We calculated the weight using the percentage of polyelofin encapsulant (2.7%) and polyphenylene junction box (0.27-0.29%) in our series 6 Plus and Series 7 solar modules, multiplied by the number of Series 6 Plus and Series 7 modules produced in 2023.
[Fixed row]

(10.6) Provide the total weight of waste generated by the plastic you produce, commercialize, use and/or process and indicate the end-of-life management pathways.

Usage of plastic

(10.6.1) Total weight of waste generated during the reporting year (Metric tons)

160

(10.6.2) End-of-life management pathways available to report

Select all that apply

☑ Recycling

(10.6.4) % recycling

100

(10.6.12) Please explain

First Solar has a unique and longstanding leadership position in PV recycling, having established the industry's first global recycling program in 2005, and recycled nearly 400,000 metric tons of PV modules to date. In 2023, we recycled 31,173 metric tons of solar modules and achieved a global average material recovery rate of approximately 95%. Out of the 31,173 metric tons of modules recycled, plastic materials accounted for approximately 160 metric tons or approximately 0.5%. The majority of what we recycle today is manufacturing scrap so the junction box is not included. When we do recycle the junction box it is sent to a plastic recycler.
[Fixed row]

C11. Environmental performance - Biodiversity

(11.2) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

(11.2.1) Actions taken in the reporting period to progress your biodiversity-related commitments

Select from:

☑ Yes, we are taking actions to progress our biodiversity-related commitments

(11.2.2) Type of action taken to progress biodiversity- related commitments

Select all that apply

☑ Land/water management

☑ Other, please specify :Tree Planting

[Fixed row]

(11.3) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?
	Select from: ☑ No

[Fixed row]

(11.4) Does your organization have activities located in or near to areas important for biodiversity in the reporting year?

Legally protected areas

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.

UNESCO World Heritage sites

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.

UNESCO Man and the Biosphere Reserves

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.

Ramsar sites

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.

Key Biodiversity Areas

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.

Other areas important for biodiversity

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ No

(11.4.2) Comment

We seek to improve the local communities and environment where we operate. We use the WWF biodiversity risk filter to screen our manufacturing locations for impacts on biodiversity. Although none of our manufacturing facilities are located in or near biodiversity-sensitive areas, we recognize the importance of protecting biodiversity and native habitats. In 2023, First Solar India planted 5,000 saplings for a green bed development surrounding our manufacturing facility. In 2024, First Solar India planted 12,000 additional saplings.
[Fixed row]

C13. Further information & sign off

(13.1) Indicate if any environmental information included in your CDP response (not already reported in 7.9.1/2/3, 8.9.1/2/3/4, and 9.3.2) is verified and/or assured by a third party?

(13.1.1) Other environmental information included in your CDP response is verified and/or assured by a third party

Select from:

☑ No, but we plan to obtain third-party verification/assurance of other environmental information in our CDP response within the next two years

(13.1.2) Primary reason why other environmental information included in your CDP response is not verified and/or assured by a third party

Select from:

☑ Lack of internal resources, capabilities, or expertise (e.g., due to organization size)

(13.1.3) Explain why other environmental information included in your CDP response is not verified and/or assured by a third party

First Solar's GHG emissions inventory is externally verified on an annual basis with the International Standard ISO 14064 Part 3 (ISO 14064-3) as well as the WRI/WBCSD GHG Protocol. We did not seek third-party assurance for the other environmental data due to budget restraints however we intend to pursue third-party assurance within the next year.
[Fixed row]

(13.2) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

(13.2.1) Additional information

First Solar's 2024 sustainability report is available at https://firstsolar.com/-/media/First-Solar/Sustainability-Documents/FirstSolar_Sustainability-Report_2024.ashx?laen

(13.2.2) Attachment (optional)

FirstSolar_Sustainability-Report_2024.pdf
[Fixed row]

(13.3) Provide the following information for the person that has signed off (approved) your CDP response.

(13.3.1) Job title

Chief Product Officer

(13.3.2) Corresponding job category

Select from:
☑ Other C-Suite Officer
[Fixed row]

(13.4) Please indicate your consent for CDP to share contact details with the Pacific Institute to support content for its Water Action Hub website.

Select from:
☑ Yes, CDP may share our Disclosure Submission Lead contact details with the Pacific Institute