Powering a Circular Economy: Sustainable Manufacturing & Recycling

2023

maxeon

POWERING POSITIVE CHANGE

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Introduction

Maxeon Solar Technologies, Ltd. (“Maxeon”) is committed to the protection of the environment through a circular economy approach. This includes responsible product life-cycle management, from materials sourcing through manufacturing, all the way to recycling.

Some of our successes are being certified by: (i) Declare for the transparency of the materials in our products; (ii) NSF for having a landfill-free facility; (iii) LEED for five Gold or Platinum rated buildings; (iv) the Cradle to Cradle Products Innovation Institute as a Silver-rated company under its Cradle to Cradle criteria, the highest in the solar industry; and (v) ISO14001:2005 Environmental Management Systems (EMS), which is the international standard that provides a framework for organizations to improve environmental performance.
As a validation of our efforts to date, we were recently named one of the top 100 most sustainable companies in the world (out of nearly 7000 evaluated) by Corporate Knights.

This document is designed to share key learnings on our sustainability journey with respect to the circular economy. Our Powering a Circular Economy program is being continually enhanced to achieve better performance over time for the benefit of our people and planet.

Please contact us with any questions or comments on this document at esg@maxeon.com.

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NSF
Landfill-Free Facility
NSF P445

CERTIFIED
cradle to cradle
SILVER

Declare.

Circular economy practices

Panels as clean as the energy they produce

Circular economy is a concept that closely aligns with Maxeon's commitment to the United Nations' Sustainable Development Goal (UN SDG) 12: 'Responsible Consumption and Production.' This relates to the efficient use and management of natural resources whilst ensuring waste is reduced and repurposed to result in a closed-loop system. This "cradle to cradle" approach is outlined below and has been certified by many respected international bodies.

Materials sourcing

- Screen suppliers for carbon footprint and other environmental metrics
- Public disclosure of all panel materials with **Declare label***
- **Lead-free** and **RoHS and REACH-SVHC compliant,** meeting strict standards set for over 190 harmful chemicals in the EU
- Supplier adherence to Maxeon policies to reduce the consumption of natural resources and use of hazardous substances

Production

- **Industry's first and only Zero-Waste-To-Landfill certified manufacturing facility**
  - <1% of material from our facility in Mexico is sent to a landfill and <10% of material is sent to a waste-to-energy facility
- Components produced in **LEED Gold-certified factories®** in Malaysia, Philippines & Mexico
- **Cradle to Cradle Certified Silver,** demonstrating high standards in material health, water stewardship and social fairness
- **Zero-tolerance policy** for any violations of local and international human and labor rights standards among our suppliers and manufacturing partners.

Product use

- Our panels make a significant contribution to **LEED® certification** for commercial buildings
- Our **40-year product warranty** ensures systems will be producing clean energy for decades to come
- Our high panel efficiency can reduce the volume of materials needed for cables, connectors and balance of systems

Product re-use

- We take back panels that are under warranty through our Takeback Policy for recycling
- We support our customers in their recycling efforts by working with local recycling experts in the countries where we operate
- We take a collaborative approach with recyclers, encouraging them to develop innovative ways to process materials for a secondary use

*Our Maxeon Line panels are Declare Label certified

Sustainable supply chain

Clean from the start

At the beginning of the process of bringing a Maxeon product into the world, we endeavor to work with suppliers that are not only best in class in quality and competitive in price, but also suppliers that match our values.

We have incorporated ESG factors into the selection process for suppliers of our products. Factors we consider include all aspects of ESG:

- **E -** Environmental factors such as carbon footprint and packaging
- **S -** Commitment to international fair labor and human rights standards
- **G -** Adherence to Maxeon standards on anti-corruption and other governance measures

We ensure our suppliers' ongoing commitment through annual certification of our Supplier Sustainability Guidelines and by requiring our suppliers to attend trainings on our Code of Conduct.

Due to the complex and multi-layered nature of global supply chains, we require suppliers to commit not only to their practices but to account for their supply chains as well, including the use of raw materials.

Sustainable supply chain

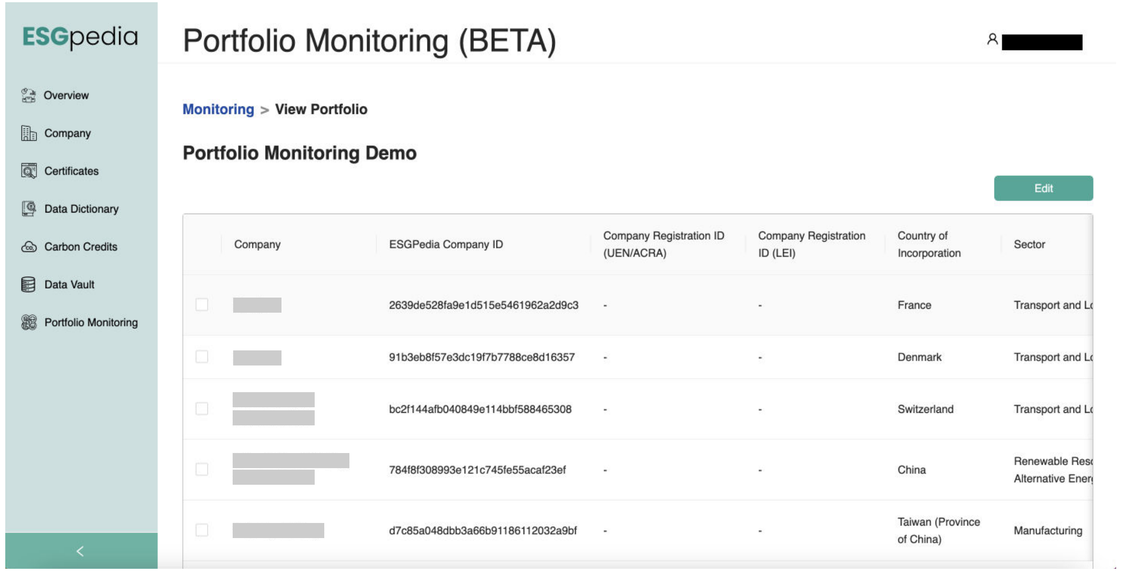
Trailblazing new approaches

As part of our commitment to being an industry leader, in 2022 we initiated a pilot supplier sustainability monitoring program with Singapore-based, ESG fintech Hashstacs Pte Ltd (STACS) via its ESGpedia platform, which powers the ESG registry of the Monetary Authority of Singapore (MAS) Project Greenprint.

Maxeon and STACS embarked on the project to leverage holistic ESG data and digital tools on ESGpedia for monitoring the sustainability performance of suppliers in Maxeon's end-to-end supply chain.

As a registry with a reliable record of sustainability certifications and verified ESG data across various sectors, ESGpedia provides Maxeon a common point of access for holistic ESG data. This facilitates better tracking and analysis of suppliers' sustainability commitments, impact measurement, while alleviating concerns of greenwashing.

The ESGpedia platform also enables Maxeon to select suppliers based on their emissions and provide greater transparency of our carbon footprint to our stakeholders.



Sustainable manufacturing

Putting our values in our processes

The areas of focus in Maxeon's sustainable manufacturing process include:

Compliance obligations and due diligence

Ensure compliance to all applicable regulatory and statutory requirements.

Environmental footprint and impact

Resource consumption reduction, e.g., Materials/ Chemicals, Energy, Water, Waste Reduction, Green House Gas Emission Reduction, Wastewater Discharge Reduction, Material Recovery and Reuse throughout the product lifecycle.

Efficiency and waste reduction

Equipment design for green and efficient production, use of materials that are environmentally responsible, elimination of numerous process steps to reduce material usage and waste, automation to eliminate manual handling and exposure to hazardous materials.

Sustainable facilities

Components produced in **LEED Gold factories** in Malaysia, Philippines & Mexico, embarking on decarbonization by procuring renewable energy.

Environmental monitoring and measurement

Auto Detection Systems to eliminate or reduce releases and exposure to toxic substances.

Operational and abatement controls

Operations run as designed to ensure minimal environmental degradation. Installation of Abatement Systems plus backup to ensure all discharge and emissions are treated prior to release to environment.

Stakeholder engagement

Regulatory and local government units, nearby communities, external providers and other external organizations.

Social impact

Human rights, labor management, health & safety etc.

Economy

Respond to customer needs and reach new customers; increase competitive edge; strengthen brand and reputation; and continuous innovation.

Sustainable product

Panels that stand the test of time

Solar panels with longer lifetimes reduce demand for new materials. The Sunpower Maxeon panel line is backed by the solar industry's best-in-class warranty of 40 years, the longest lifetime in the industry.

The US National Renewable Energy Laboratory (NREL) has evaluated the trade-offs between extending PV module lifetimes or ramping up closed-loop recycling for solar panels with shorter lifetimes and published its findings in PLOS One. The results show that modules with longer lifetimes reduce new material demand through lower deployment, resulting in less waste. It was concluded that offsetting new material demand can be accomplished in ways other than recycling, including high-yield, high-efficiency, reliable systems (thereby reducing replacement and total deployment needs), remanufacturing of components, and circular material sourcing.

Additionally, longer operating life means that significantly more clean energy is generated by each panel, greatly improving the environmental footprint of the technology.

The new SunPower Maxeon 40-Year Warranty is based on external field studies from more than 33 million Interdigitated Back Contact (IBC) panels deployed worldwide, comprehensive accelerated life testing by Maxeon and third parties, and a physics-based model which Maxeon uses to determine the expected performance impact over time from major degradation and failure modes. The result is an unprecedented 88.3 percent warranted power level at the end of 40 years, meaning Maxeon IBC panels deliver up to 9.5% more power after 40 years than standard solar panels deliver after 25 years.

Collectively, these results give Maxeon and our customers confidence that the SunPower Maxeon module technology can support a 40-year warranted life, and that continued operation beyond this period is certainly feasible.

Maxeon's high efficiency, high yield and industry's longest warranty of 40 years could reduce new material demand, resulting in less waste, lower carbon emissions and environmental impact.

Sustainable packaging

Lean and green

Maxeon's policy is to use reusable package designs over expendable or recyclable ones, provided other costs are equivalent and safety and product protection are not compromised.

The design of a reusable container system is a joint effort between Maxeon, suppliers and contractors. The involvement of each party is necessary to fully understand and account for the logistics affecting operations at all locations. Contractors need to clearly understand the process to collect, store, bundle and return packaging. Where a returnable packaging solution is in place, consideration is given to a collapsible design for optimization of Maxeon's return program.

If recycling is unavoidable, packaging materials are marked with the applicable recycling code. The code with chasing arrows and material abbreviation shall be legible to the end user/customer.

The overall result is as little packaging as possible.

Some of the packaging regulations and standards we follow around the world include:

- Directive 94/62/EC on Packaging and Packaging Waste, and its amendments
- Directive EC/1907-2006 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- U.S. Labeling Guidelines: Federal Trade Commission "Environmental Marketing Guides" (Similar in UK and Canada)
- AS/NZS ISO 14021:2000 Australia & New Zealand Standard, Environmental labels and declaration: Self declared environmental claims

Standards

- EN 13427:2004 Requirements for the use of European Standards in the field of packaging and packaging waste
- EN 13428:2004 Requirements specific to manufacturing and composition: Prevention by source reduction
- EN 13430 Requirements for packaging recoverable by material recycling
- Life Cycle Assessment General Principles Standard: ISO 14040:1997
- Australian Packaging Covenant: https://apco.org.au/

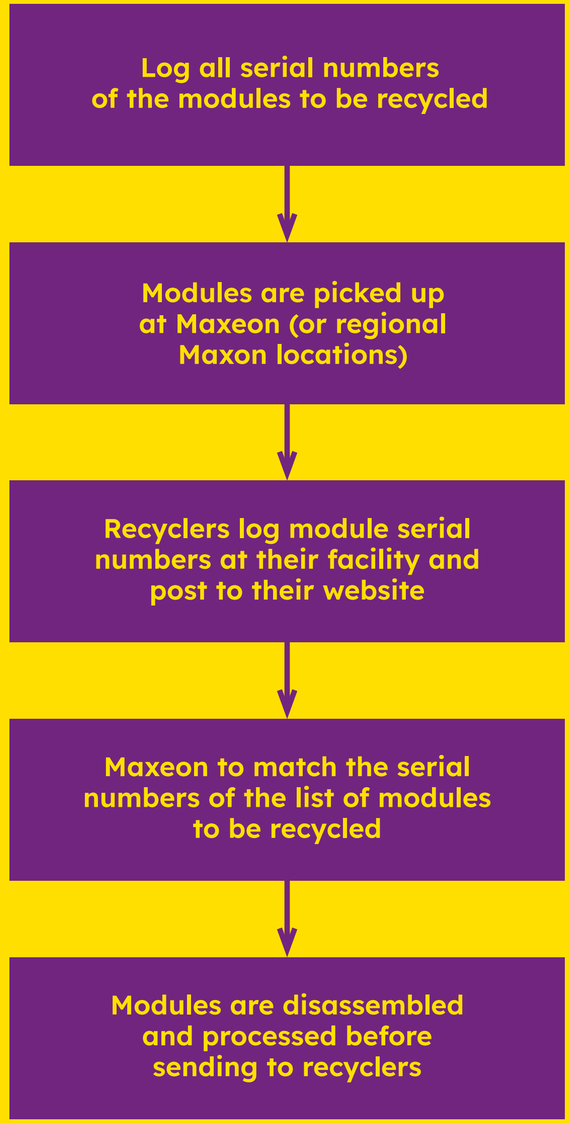
Maxeon's recycling process

A fresh start for our retired panels

Maxeon has implemented a recycling process for PV modules returned under warranty to ensure reliability and safety procedures are adhered to during the process.

The serial numbers of the modules to be recycled are first recorded by Maxeon, then the modules are picked up at Maxeon (or regional Maxeon location) by the recycling provider. The recyclers log module serial numbers at their facility, and post to our page on their website. Maxeon matches their list with the initial list and once matched, Maxeon gives the go-ahead to begin the mechanical recycling process. The modules are then disassembled and processed as follows:

- Aluminum framing sent to metals recycler,
- J-Box/plastics ground and sent to plastics recycler,
- Wire stripped to components, and copper, rubber sent to appropriate recycler, and
- Remaining module is then broken and ground into small pieces and sent to reclaim processor, where it is melted down and the glass, silicon, etc., separated and recycled.



Maxeon's takeback policy

Taking accountability for what we produce

Maxeon Solar Technologies is committed to being a responsible producer and provides appropriate reuse and recycling options for our products. In compliance with all local and national regulations, our Takeback Policy takes a collaborative approach with recyclers, encouraging them to develop innovative ways to process materials for a secondary use. In each case, we work with local recycling experts in the countries where we operate. Our agreements with government-authorised partners are designed to provide the most efficient return, separation and reclamation possible.

Australia

Although there is no local legal obligation, we work with local partners to collect and recycle the PV panels. Reclaimed cells are tested and integrated back into the PV industry wherever possible. Otherwise, they are recycled.

Japan

In accordance with the Waste Management Law, our solar panels are recycled by two regionally authorised partners, Hamada and Kinki Denden Yusou Co, who target the separation and recycling of as many elements as possible.

United States

SunPower co-led the first US-based industry-wide recycling program with the Solar Energy Industries Association, and requires all recycling vendors to be either R2/RIOS or e-Stewards certified.

Europe

Through Maxeon's membership in the Waste from Electrical and Electronic Equipment (WEEE) Directive, Maxeon pays a provision for every panel at the time of sale. This ensures resources are available for our partners to organise the collection and recycling of all Maxeon warranted panels.

France – SOREN
Italy – ERP
Germany – PV Cycle Deutschland
Netherlands – Stichting OPEN
Spain – PV Cycle Aisbl / ECOASIMILEC Foundation
UK – PV Cycle UK

In our smaller EU markets and rest of the world, WEEE compliance is managed through our partner and distributor networks. By joining the EU PV Alliance, we are also actively improving our supply chain to be more sustainable and resilient.

Recycling partner requirements

Holding our partners to the highest standards

Our module recyclers are required to have either the R2/ RIOS or e-Stewards certification. These certifications confirm that the company has appropriate environmental, health and safety (EH&S) management systems, a hierarchy for responsible waste management strategies, and complies with all applicable legal requirements related to data security and import and export of waste. In addition to these certifications, all recyclers must provide relevant OHSAS and ISO certifications where relevant.

Regulatory & non-regulatory frameworks (cont.)

The amount of solar waste is set to rise rapidly after 2030. Therefore, there are increasingly more guidelines and regulations being implemented globally as countries prepare for the influx. Maxeon takes into consideration these global regulatory frameworks when implementing our recycling program. These include but are not limited to the jurisdictions described herein.

European Union (EU) Waste Electrical and Electronic Equipment Directive (WEEE Directive)

EU has set up one of the main regulatory frameworks based on WEEE directives to address electrical and electronic waste. The objective of this framework is to effectively address the electrical and electronic waste generation in the 28 EU member states and define certain responsibilities among different stakeholders. According to the WEEE directives, all electrical or electronic product producers are legally accountable for proper waste management of products sold within the EU, no matter where their manufacturing facilities are located. The WEEE directive has detailed guidelines that includes collection, recovery, and recycling, along with environment and public health safety.

According to the latest WEEE directive, PV producers have primary liability for the costs of collection, handling and treatment of solar panels waste.

United Kingdom's regulatory and non-regulatory frameworks

The WEEE Regulations 2013 came into force in the UK on January 1, 2014. PV module producers are required to share certain data, such as the number of PV modules produced or imported, and their delivery network channels, and should also maintain a registered product conformity plan.

Producers have obligations both in terms of the waste from electronic or electrical equipment (WEEE) they sell and in terms of financing the collection, treatment, recovery and environmentally sound disposal of WEEE. Those producers who sell direct to households in the UK (e.g. retailers, internet sellers and other distance sellers) have additional obligations as a distributor of household WEEE.

Regulatory & non-regulatory frameworks (cont.)

United States of America's regulatory and non-regulatory framework

In addition to generally applicable laws governing waste disposal (i.e., Resource Conservation and Recovery Act (RCRA)), some states have started to develop tailored regulations for the collection, handling and use of end-of-life PV modules.

The solar waste regulations of the top five U.S. solar states include[1]:

- California: PV modules are considered "universal waste," a lesser classification of hazardous waste that eases some transport issues and costs for recyclers to facilitate financially sustainable recycling operations.
- North Carolina: Regulation N.C. H329, passed in 2019 that addresses solar panel stewardship
- Arizona, Florida and Texas: Common waste regulation

The RCRA is the public law that creates the framework for the proper management of hazardous and non-hazardous solid wastes. Regulations under the RCRA must be followed to ensure that solar panel waste is safely recycled or disposed of.

[1]Referenced from PV Magazine: https://pv-magazine-usa.com/2020/12/03/solar-panel-recycling-in-the-us-a-looming-issue-that-could-harm-growth-and-reputation

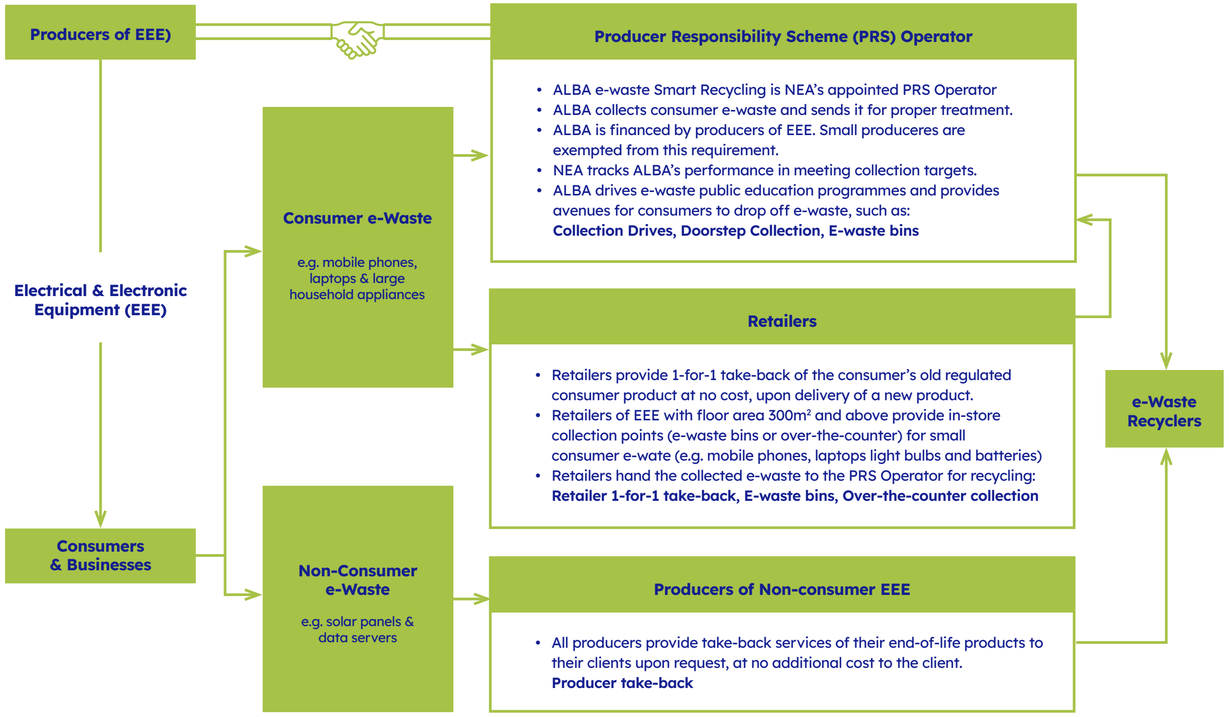
Regulatory & non-regulatory frameworks (cont.)

Singapore's Extended Producer Responsibility (EPR) system for e-waste management system

The Singapore National Environment Agency (NEA) has introduced a regulated e-waste management system that will ensure the proper collection and handling of e-waste and the extraction of valuable resources from e-waste. The regulated e-waste management system will also safeguard the environment and our health.

The regulated e-waste management system is based on the Extended Producer Responsibility (EPR) approach, where producers bear the responsibility for the collection and treatment of their products when they reach end-of-life. This EPR system is implemented through the Resource Sustainability Act (RSA), administered by the NEA. In addition, ALBA E-waste Smart Recycling Pte Ltd has been appointed as the Producer Responsibility Scheme (PRS) Operator for a period of five years, from 1 July 2021 to 30 June 2026, to collect regulated consumer electrical and electronic waste across Singapore for proper treatment and recycling on behalf of producers.

Extended Producer Responsibility (EPR) for e-waste by 2021



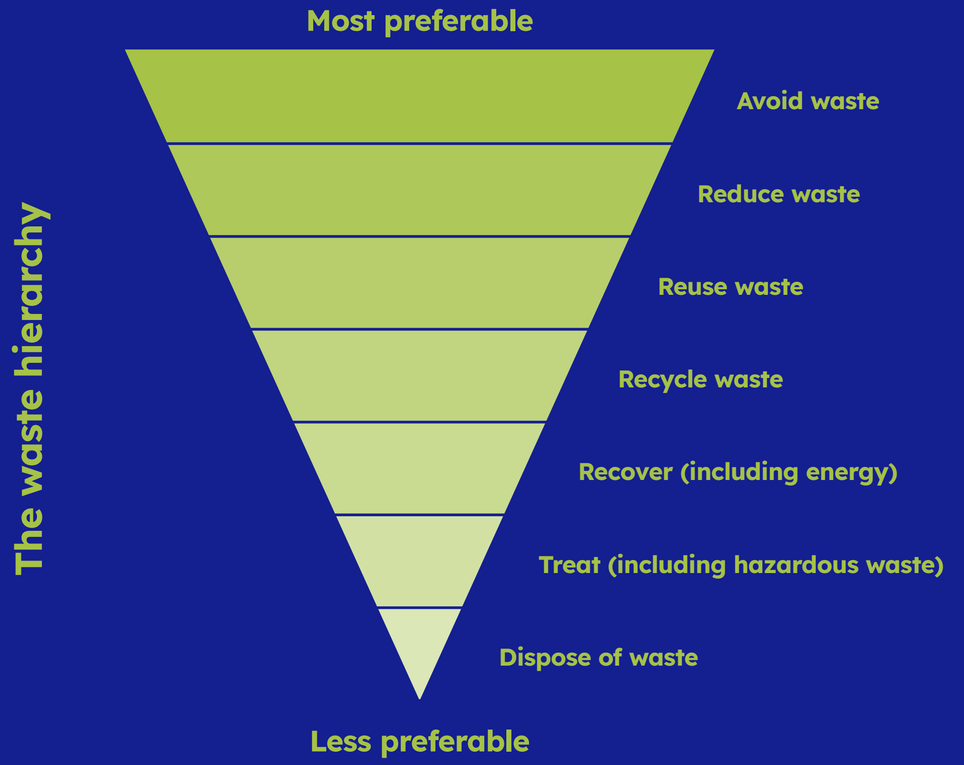
Regulatory & non-regulatory frameworks (cont.)

Australia's national waste policy (2018)

The 2018 National Waste Policy provides a framework for collective action by businesses, governments, communities and individuals until 2030.

The policy identifies five overarching principles underpinning waste management in a circular economy. These include:

- Avoid waste;
- Improve resource recovery;
- Increase use of recycled material and build demand and markets for recycled products;
- Better manage material flows to benefit human health, the environment and the economy; and
- Improve information to support innovation, guide investment and enable informed consumer decisions.



Resources available

For more information on Maxeon Environmental, Social and Governance (ESG):

Corporate ESG information: corp.maxeon.com/esg

Sustainability Report 2021: corp.maxeon.com/esg/sustainability-reports/report-2021

Latest sustainability updates: corp.maxeon.com/blog

“ Taking action to power a circular economy ensures our solar panels stays sustainable and as clean as the energy they produced, even after they have reached the end of their lifecycle.”

Zach Campeau

Director of Products

For any questions on this Report, please contact esg@maxeon.com.
To find out more about our ESG commitments, visit our webpage here.