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# Cradle to Cradle® Design and the Cradle to Cradle Certified™ Program for Products

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BIZNGO

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# MBDC Overview

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- MBDC: McDonough Braungart Design Chemistry
  - Product and process design firm founded in 1995
  - Core staff of 15, located in Charlottesville, VA
  - Established network of partners and affiliates
  - Project teams staffed with engineers, basic scientists, chemists, IT experts and business strategists
- Dedicated to revolutionizing the design of products and services worldwide
- Originators of the Cradle to Cradle® philosophy and certification program



# Services

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- Product Design and Development Consulting
- Sustainability Communications Consulting
- Chemical and Material Benchmarking for Human and Environmental Health
- Material and Product Optimization
- Consulting for the Cradle to Cradle Certified program



# “Design Chemistry”

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- True merger of Chemistry and Design
- Achieving the highest standards of *design*
- Beginning with a scientific understanding of the basic *chemistry* of materials, products and processes
- Developing and implementing solutions to foster *profitable* and *regenerative* systems



PEPSICO



ALCOA

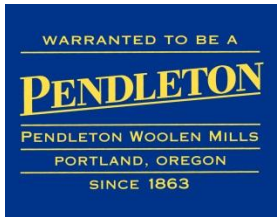
Allsteel®



SLOAN



DESIGN  
Tex



CENTRIA



HAWORTH®



PolySteel®

# Cradle to Cradle Overview

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## What is Cradle to Cradle Design?

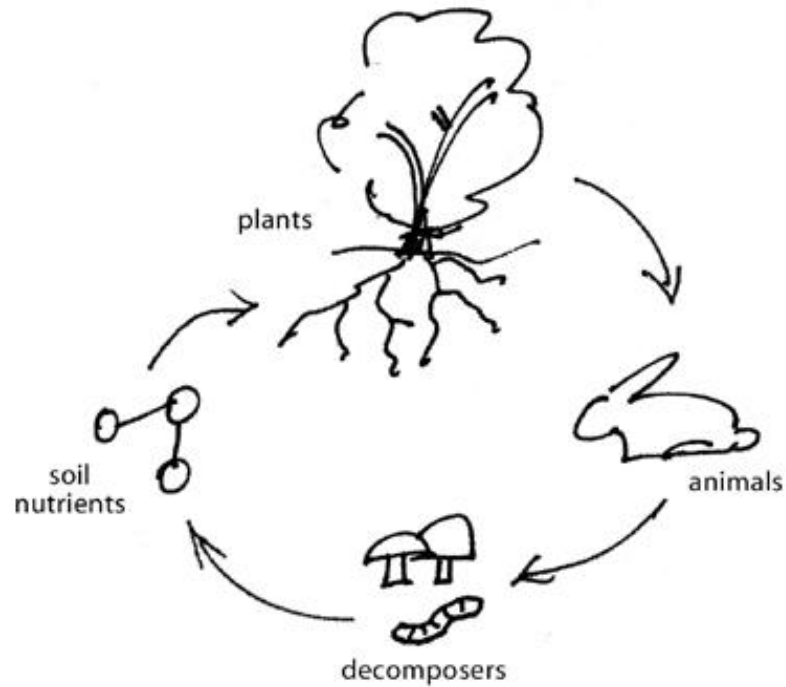
It's a process for creating products that:

- Use only those materials/chemicals that are safe for human and environmental systems
- Are designed to facilitate the recovery of those materials via product reuse, true recycling of product, or safe composting of product
- Maximize the use of renewable energy during manufacture and use
- Respect the local watershed
- Are manufactured in a socially responsible way



# Natural Cycles

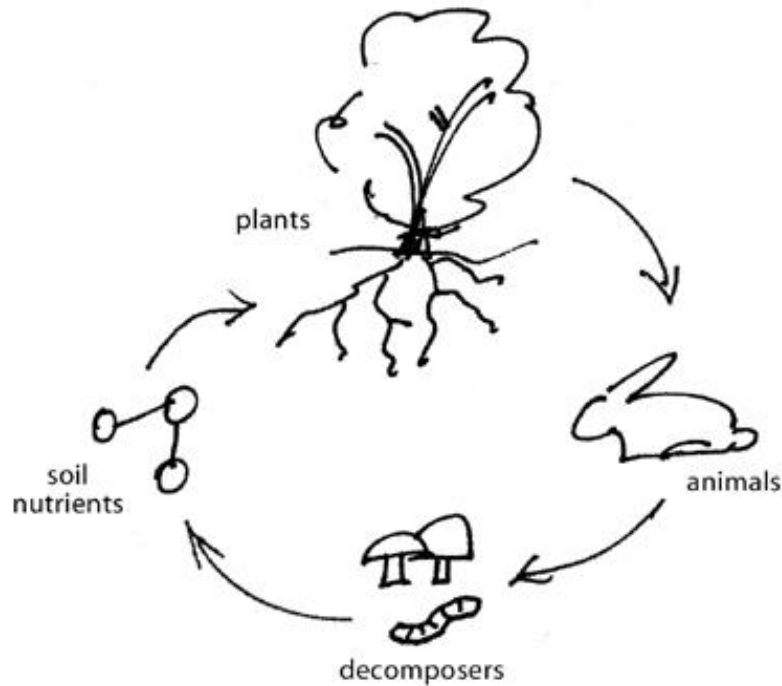
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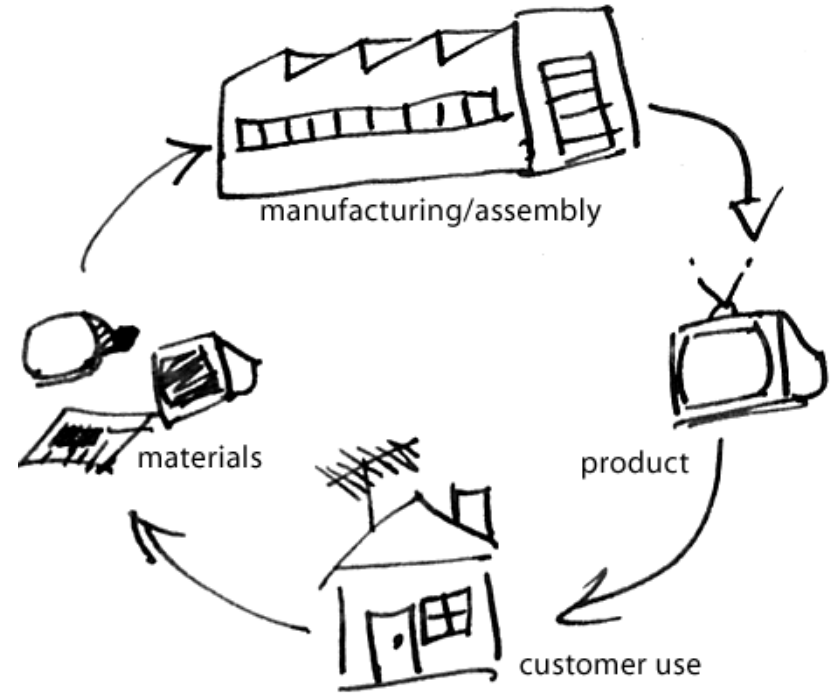
**Biology 101**

# Emulating Natural Cycles

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Biological  
Nutrients

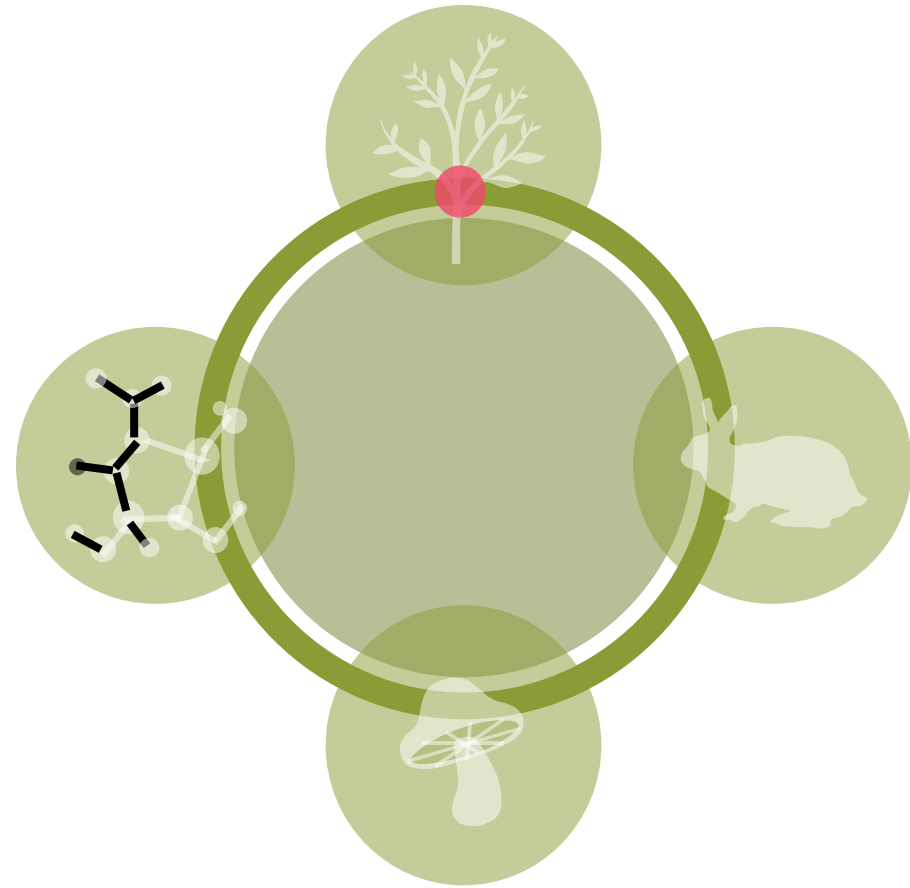


Technical  
Nutrients

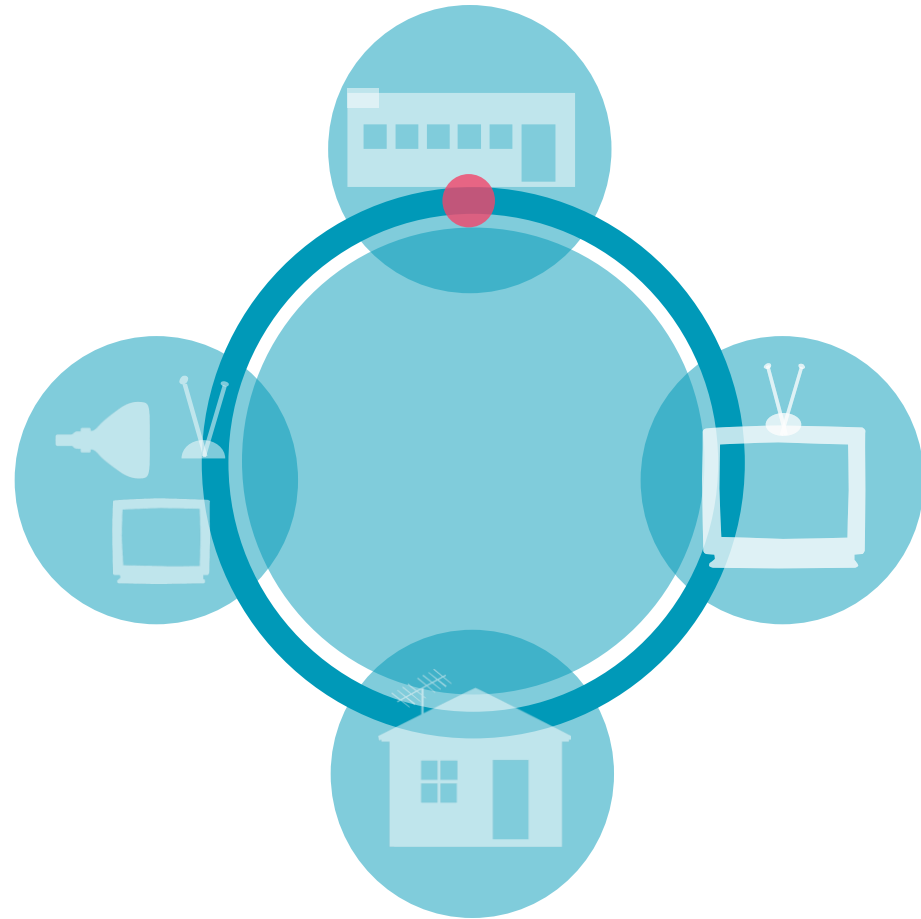


# Two Metabolisms

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Biological  
Metabolism



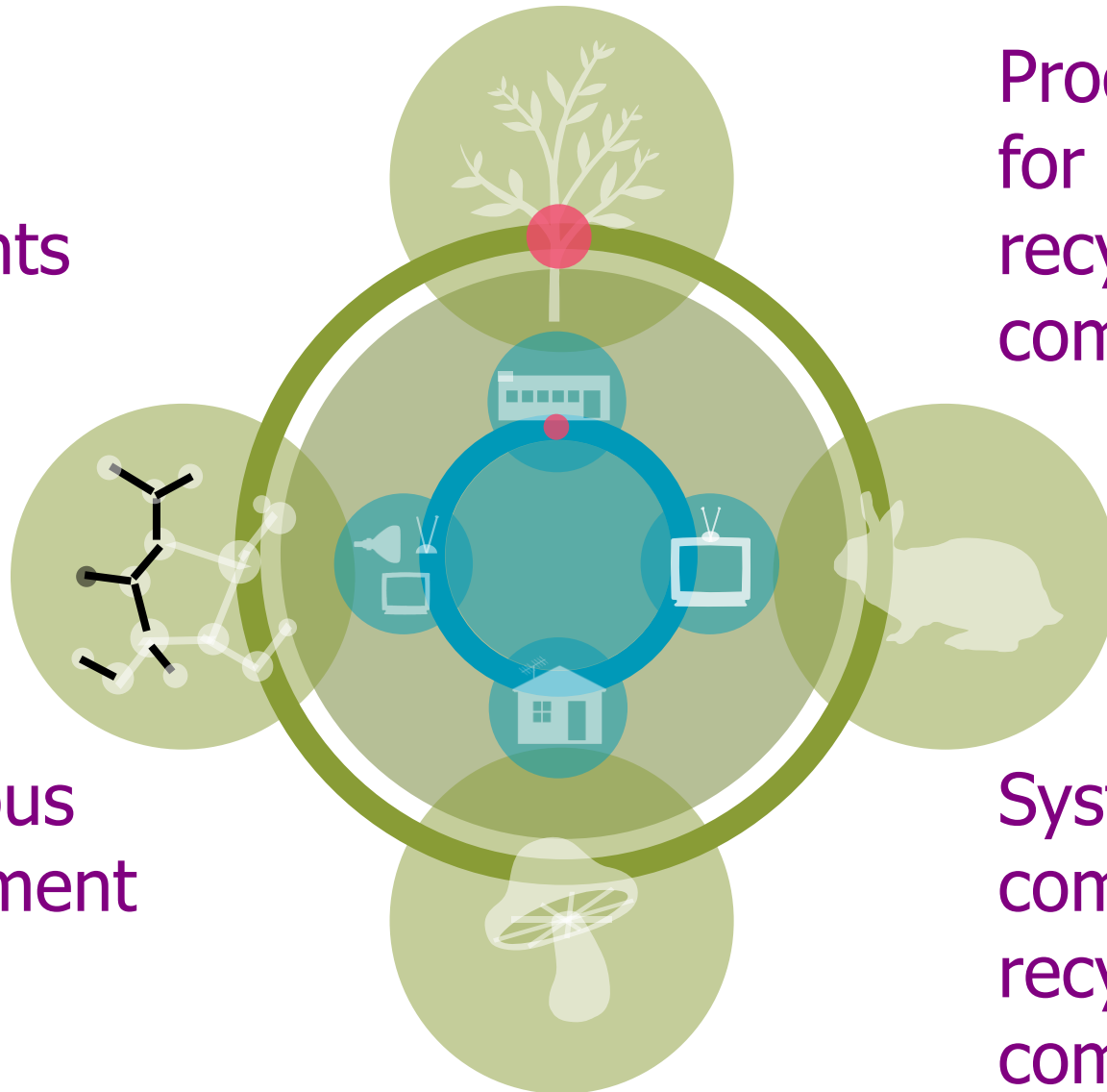
Technical  
Metabolism

# Nested, Interdependent Metabolisms

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Safe,  
healthy  
ingredients

Product design  
for  
recyclability /  
compostability



Continuous  
improvement

Systems for  
complete  
recycling /  
composting

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# Cradle to Cradle Certified<sup>CM</sup> Program for Products

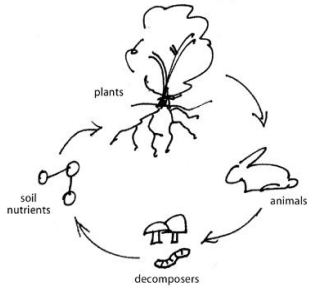


# Cradle to Cradle Products Innovation Institute

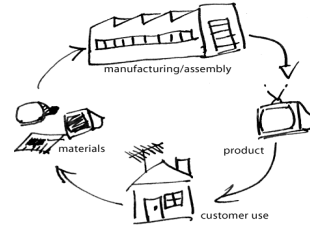
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# Cradle to Cradle Products Innovation Institute™



- Institute's primary role is to manage the product certification program and issue certificates
- Institute licensed to issue certificates under V.2.1.1 since August 2010
- Institute issued first certifications in January 2012
- Assessment Providers submit certification materials directly to C2CPII on V3



# Certification Stats

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- Launched in October of 2005
- Over 125 Manufacturers Participating Representing More Than 10 Countries
- ~425 Certified Products
- Have External Advisory Board
- Managed By The Cradle to Cradle Products Innovation Institute
- Version 3.0 Implemented January 2013



# Certification Overview (V3.0)

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- Five-tiered program
- Applicable to all industry sectors
- Applicable to materials, sub-assemblies and finished products
- Part of EPA's Environmentally Preferable Purchasing program
- Part of USGBC LEED Innovation in Design (Commercial) and LEED for Homes programs
- Included in LEED v4
- Eligible to sell on eBay's World of Good



# Multi-attribute

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- Material Health
- Material Reutilization
- Renewable Energy and Carbon Management
- Water Stewardship
- Social Fairness





# Certification Process

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1. Application
2. Site Visit
3. Data Collection
4. Assessment
5. Submit Packet to C2CPII
6. Biennial Renewal



# Certification Marks

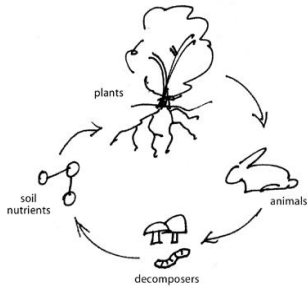
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Marks licensed by C2CPII from MBDC



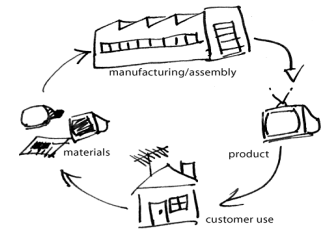
# Transitioning

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Current certification holders are granted 2 years to bring products up to compliance with Version 3.0 requirements, and will maintain their current certification status during that time.

New certifications are required to comply with Version 3.0.



# Certification Criteria

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1.0 Materials

2.0 Material Reutilization/DfE

3.0 Energy & Carbon Management

4.0 Water

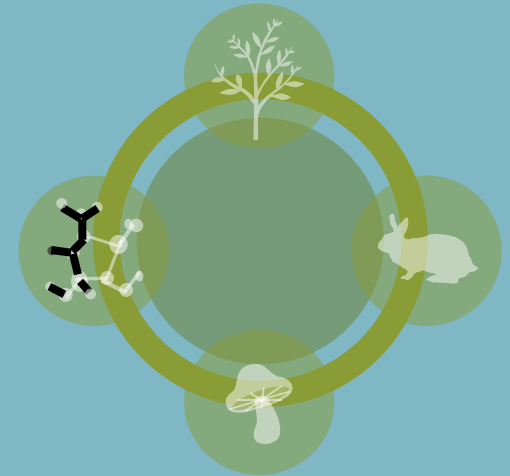
5.0 Social Fairness

- Combination of product metrics & company metrics
- Intention: spur innovation & ongoing optimization



# Material Health

The intent of the Material Health section is give manufacturers the tools to build products that are safe and healthy for humans and the environment from production to use to reuse.



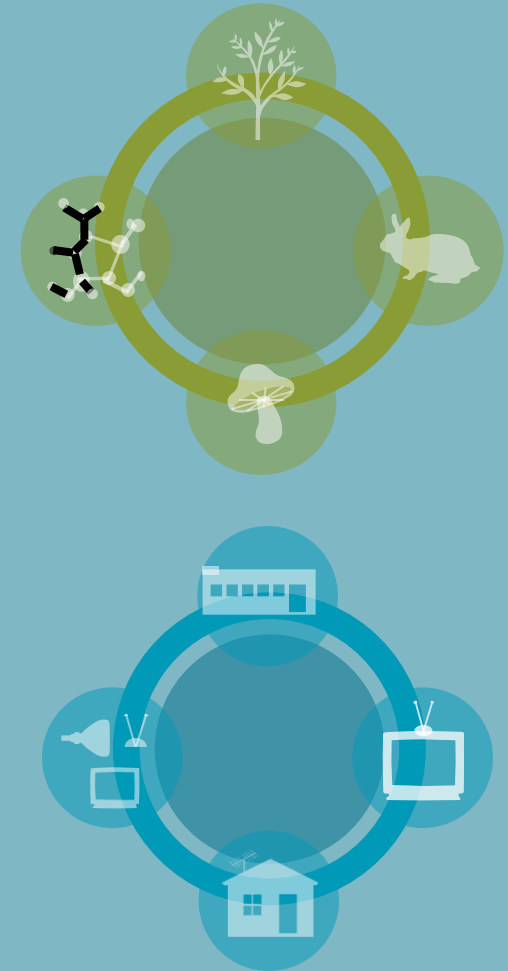
# Material Health

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"><li>• The product is 100% characterized by its generic materials (e.g. Aluminum, Polyethylene, Steel, etc.) and/or product categories and names (e.g. coatings)</li><li>• The appropriate metabolism (i.e. Technical or Biological) has been identified for the product and its components</li><li>• The product does not contain any Banned List substances based on supplier declarations</li></ul>
<b>BRONZE</b>	<ul style="list-style-type: none"><li>• The product is at least 75% assessed (by weight) using A, B, C, X ratings. If a product contains EMCs, they will be considered assessed and will contribute to the overall percentage of the product that is assessed. For products that are entirely BN in nature (e.g. cosmetics, personal care, soaps, detergents, etc.) they must be at least 100% assessed.</li><li>• A phase out/optimization strategy has been developed for those materials with an X rating</li></ul>
<b>SILVER</b>	<ul style="list-style-type: none"><li>• The product is at least 95% assessed (by weight) using A, B, C, X ratings. If a product contains EMCs, they will be considered assessed and will contribute to the overall percentage of the product that is assessed. For products that are entirely BN in nature (e.g. cosmetics, personal care, soaps, detergents, etc.) they are 100% assessed.</li><li>• The product contains no substances known or suspected to cause cancer, birth defects, genetic damage, or reproductive harm (CMRs) after the A, B, C, X assessment has been carried out.</li></ul>
<b>GOLD</b>	<ul style="list-style-type: none"><li>• The product is 100% assessed using A, B, C, X ratings. All EMCs are considered to be assessed as non-X.</li><li>• The products contains no X assessed materials (optimization strategy is not required)</li><li>• Product meets C2C emissions standards</li></ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"><li>• All process chemicals are assessed and none are assessed X</li></ul>

# Material Reutilization

Material Reutilization is intended to create incentive for industry to eliminate the concept of “waste” by designing products with materials that may be perpetually recycled to retain their value.

The Program challenges companies to take more responsibility for creating the infrastructure and systems necessary for recovering and recycling materials as the nutrients necessary to fuel our global economies.



# Nutrient (Re)utilization Score

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Combination of product's recyclability/compostability and recycled/renewable content

$$\frac{(\% \text{ of the product considered Recyclable or Compostable}) * 2 + (\% \text{ Recycled or Renewable content}) * 1}{3}$$

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Example:

Product X components are 80% recyclable and 40% recycled content

$$\frac{[(80) * 2] + [(40) * 1]}{3} = 67$$



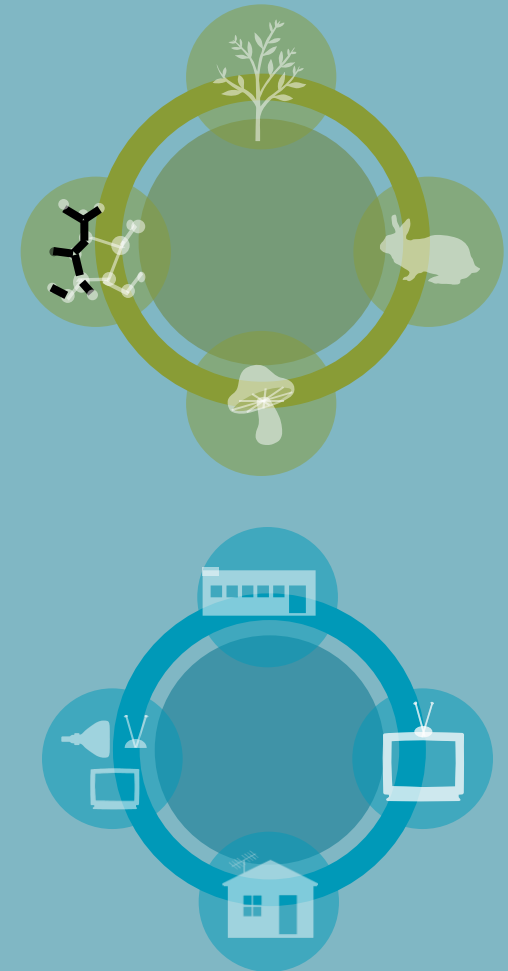


# Material Reutilization

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"><li>Each generic material in the product is clearly defined as an intended part of a biological or technical cycle (this is covered by the material health requirement at BASIC; see material health guidance)</li></ul>
<b>BRONZE</b>	<ul style="list-style-type: none"><li>Material Reutilization Score is between 35 and 50</li></ul>
<b>SILVER</b>	<ul style="list-style-type: none"><li>Material Reutilization Score is between 51 and 65</li></ul>
<b>GOLD</b>	<ul style="list-style-type: none"><li>Material Reutilization Score is between 66 and 99</li><li>Company has completed “nutrient management” strategy for the product including scope, timeline, and budget</li></ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"><li>Material Reutilization Score equal to 100</li><li>Product is actively being recovered and cycled in either a technical and/or biological metabolism</li></ul>

# Renewable Energy & Carbon Management

Cradle to Cradle® design envisions a future in which industry and commerce positively impact energy supply, ecosystem balance, community, and ultimately strive to keep carbon in soil and vegetation. This is a future powered by renewable energy and built on circular material flows: use renewable energy and eliminate the concept of waste.

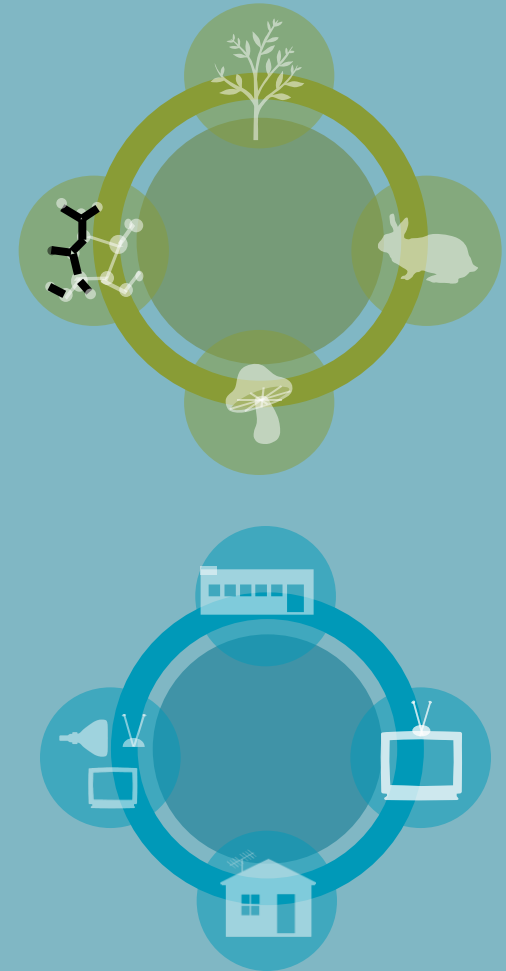


# Renewable Energy & Carbon Management

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"><li>• Energy use and carbon emissions relevant to the product are characterized (product allocated scope 1 emissions and purchased electricity)</li></ul>
<b>BRONZE</b>	<ul style="list-style-type: none"><li>• A renewable energy use and carbon management strategy is developed</li></ul>
<b>SILVER</b>	<ul style="list-style-type: none"><li>• 5% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets</li></ul>
<b>GOLD</b>	<ul style="list-style-type: none"><li>• 50% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets</li></ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"><li>• &gt;100% of purchased electricity and scope 1 emissions as estimated at the Basic level are covered by on-site renewable energy production, RECs, and/or offsets.</li><li>• The embodied energy associated with the product from Cradle to Gate is characterized and quantified, and a strategy to optimize is developed. At re-application, progress on the optimization plan is demonstrated.</li><li>• <math>\geq</math> 5% of the embodied energy associated with the product from Cradle to Gate is covered by offsets or otherwise addressed (e.g., through projects with suppliers, product re-design, savings during the use phase, etc.).</li></ul>

# Water Stewardship

The goal of the Water Stewardship category is to create awareness and drive towards the treatment of water as a valuable resource by encouraging effective management and use strategies. These goals are addressed within the Program by encouraging an understanding of, and responsibility for, water withdrawals, consumption, and releases within the local ecology, and awarding innovation in the areas of conservation, quality, and social equity.

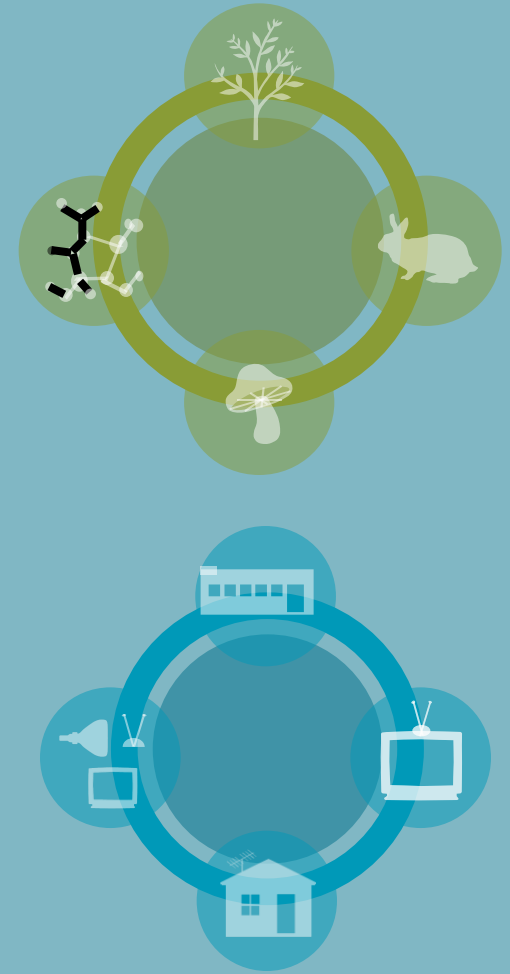


# Water Stewardship

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"> <li>All applicable effluent quality regulatory compliance thresholds are met</li> <li>Local and business specific water related issues are characterized (for example, the manufacturer will determine if water scarcity is an issue and/or if sensitive ecosystems are at risk due to direct operations).</li> <li>A statement of water stewardship intentions describing what action is being taken for mitigating identified problems and concerns is provided. At re-application, progress is demonstrated against any action plans</li> </ul>
<b>BRONZE</b>	<ul style="list-style-type: none"> <li>A facility-wide water audit is completed</li> </ul>
<b>SILVER</b>	<ul style="list-style-type: none"> <li>Product relevant effluent chemistry is characterized.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Supply chain-relevant water issues for at least 20% of Tier 1 suppliers are characterized and a positive impact strategy is developed (required for facilities with no product-relevant effluent).</li> </ul>
<b>GOLD</b>	<ul style="list-style-type: none"> <li>Product relevant effluent chemistry is optimized (Effluents identified as problematic are kept flowing in systems of nutrient recovery; effluents leaving facility do not contain chemicals assessed as problematic)</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Demonstrated progress against the strategy developed for the Silver level requirements (required for facilities with no product relevant effluent)</li> </ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"> <li>All water leaving the manufacturing facility meets drinking water quality standards</li> </ul>

# Social Fairness

The intent of the Social Fairness category is to ensure that progress is made towards sustained business operations that protect the value chain and contribute to all stakeholder interests including employees, customers, community members, and the environment. It is important for business ethics to go beyond the confines of the corporate office and permeate the supply chain, engaging responsible manufacturing, enforcing fair treatment of workers, and reinvesting in natural capital.



# Social Fairness

LEVEL	ACHIEVEMENT
<b>BASIC</b>	<ul style="list-style-type: none"> <li>A streamlined self-audit is conducted to assess protection of fundamental human rights.</li> <li>Management procedures aiming to address any identified issues are provided. Demonstration of progress against the management plan is required for renewal.</li> </ul>
<b>BRONZE</b>	<ul style="list-style-type: none"> <li>A full social responsibility self-audit is complete and a positive impact strategy is developed (based on UN Global Compact Tool or B-Corp)</li> </ul>
<b>SILVER</b>	<p>COMPLETE ONE OF THE FOLLOWING</p> <ul style="list-style-type: none"> <li>Material specific and/or issue-related audit or certification relevant to the product is complete (FSC Certified, Fair-trade, etc.; relevant to 25%+ of product)</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>Supply chain relevant social issues are fully investigated and a positive impact strategy is developed.</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>The company is actively conducting an innovative social project that positively impacts employee's lives, the local community, global community, social aspects of the product's supply chain or recycling/reuse.</li> </ul>
<b>GOLD</b>	<ul style="list-style-type: none"> <li>Complete two of the three Silver-Level requirements above</li> </ul>
<b>PLATINUM</b>	<ul style="list-style-type: none"> <li>Complete all of the Silver-Level requirements above</li> <li>A facility level audit is completed by a third party against an internationally recognized social responsibility program (SA8000, B-Corp, etc.)</li> </ul>

# SUMMARY

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## BASIC:

- Provisional certification – maximum of 2 years
- Beginning to understand the product from a Cradle to Cradle perspective (understand emissions/energy footprint, water flows, etc.)
- Product's materials are fully characterized, but not assessed (i.e. generic material types are known but not all ingredients are known)
- Identifying appropriate metabolism for product and its components





# SUMMARY

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## BRONZE:

- Officially “in the game” from a Cradle to Cradle perspective
- The majority of the product has been assessed
- Optimization plans are in development for any X assessed materials
- Creating strategy for renewable energy/carbon offsets
- Gaining a better understanding of water and energy flows
- Performing a self-audit for social fairness



# SUMMARY

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## SILVER:

- Product at least 95% assessed by weight with no highly problematic substances identified (X substances may still be present but none considered CMR)
- Optimization of problematic substances underway
- Introduced renewable energy and carbon offsets
- Expanding water stewardship and social fairness review to supply chain



# SUMMARY

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## GOLD:

- Product is fully assessed and does not contain any X assessed substances
- At least 50% renewable energy and offsets for scope 1 emissions
- Continuing to expand scope of water and social issues to supply chain and local community where product is manufactured



# SUMMARY

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## PLATINUM:

- Cradle to Cradle “holy grail”
- Waste = Food
- Energy positive
- Supply chain fully engaged



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# QUESTIONS?

