

# THE REGISTRY OF CRADLE TO CRADLE®

## INSPIRED ELEMENTS FOR BUILDING DEVELOPMENTS



Draft Consultative Beta Version 3.22

Please send us your contribution !

**A MESSAGE FROM MICHAEL BRAUNGART,  
ACADEMIC CHAIR, CRADLE TO CRADLE FOR INNOVATION AND QUALITY**

Welcome to a celebration of beneficial footprints in building developments !

I am delighted to welcome you to *The Registry Of Cradle To Cradle®-Inspired Elements For Building Developments*, a new international award-based mechanism to celebrate Cradle to Cradle-inspired innovation and add value in buildings and area developments.

The Registry is based at the Academic Chair, Cradle to Cradle for Innovation and Quality, Rotterdam School of Management, Erasmus University with participation by TUDelft and other European universities.

The Registry is founded on criteria endorsed by my esteemed C2C co-founder William McDonough and myself in *Cradle to Cradle® Criteria for the Built Environment*.

The award described in the enclosed brochure includes an affordable peer-review process so everybody can celebrate Elements inspired by Cradle to Cradle®.

**Why a Registry ?**

The success of Cradle to Cradle® has sparked demands in the marketplace for an affordable, and convenient quality-assurance mechanism to celebrate and validate C2C-Inspired Elements in buildings. These Elements go beyond green or sustainability to add value for stakeholders.

Green building certifications are important but tend to focus on minimizing negative footprints more than supporting beneficial footprints that add value. Due to costs of those processes only a few thousand out of millions of new buildings were awarded green or sustainable certifications over the past decades. Newer mechanisms such as the "Living Buildings Challenge" borrow from Cradle to Cradle® and are directed more at beneficial aspects but still require a certification process.

The Registry is a complementary step beyond those approaches to let many more stakeholders in buildings celebrate the added value of a big beneficial footprint.

**Focus on Elements**

Instead of ranking buildings against each other The Registry aims to accelerate the numbers of actively beneficial structures by celebrating the outstanding C2C-inspired Elements they use.

There is great diversity among the millions of buildings globally so it is unfair to rank them against each other. For example it is impractical to rank an office building in Stockholm against an open-air pavilion in Haiti providing telemedicine and nutrient recycling for earthquake victims.

## Quality Assurance

Although C2C is measurable, there is yet no such thing as a 'Cradle to Cradle® Building' or percentages of C2C in a building.

Nonetheless a quality assurance mechanism is required because some buildings are unilaterally designated by designers or owners as 'Cradle to Cradle' without peer review.

To encourage beneficial Elements but prevent greenwashing, the focus is on peer-evaluation where everybody can participate in validation. The Wiki-type approach also keeps costs low, which is an important feature for including as many buildings and area developments as possible.

## Universally Accessible

The Registry is open for everybody in every country to submit an application. It is based on already-built structures rather than planned ones but you can still start planning your application in the planning stage.

I hope you enjoy the wonderful examples being introduced in this Registry. While this Beta version is being optimized I encourage you to send examples of your achievements including your own description of why you think they are C2C-Inspired to;

*The Registry Of Cradle To Cradle-Inspired Elements For Building Developments*  
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friendly regards,  
Prof. Dr. Michael Braungart,  
Chair

## INTRODUCTION AND PURPOSE

Cradle to Cradle® is an innovation platform based on defined principles for improving the quality of materials, energy and life processes. The focus is on quality.

The intentions of The Registry of Cradle to Cradle®-Inspired Elements for Building Developments (The Registry) are;

- Honor achievements in creation of Cradle to Cradle®-inspired innovations.
- Celebrate and encourage diverse solutions across the many disciplines that contribute to the built environment.
- Inspire and educate others about how to make a beneficial footprint.
- Be a place where people can intellectually explore applications of the C2C® design paradigm and be a catalyst for the creation of actively beneficial features in the built environment.
- Honor achievements that may be very holistic as well as those that are very focused.

The Registry is not prescriptive. It does not include requisites, baselines, x-factors, x-criteria or minimum levels of performance.

The Registry honours achievements of innovations that have been accomplished. It only recognizes intentions for the future if already-built features which generate benefits are also accompanied by a C2C Roadmap for constant improvement.

Comparison between projects, or a hierarchy of achievement among projects are not important in The Registry.

The Registry is open source, anyone can nominate an Honor for Achievement, and anybody can send peer-reviewer evaluations.

## CRADLE TO CRADLE® IN BRIEF

The Cradle to Cradle design protocol® articulated by William McDonough and Michael Braungart et al, challenges us to rethink the way we design. It is a powerful engine for innovation, employment creation and prosperity. It moves beyond only reducing the negative impacts of human activity (eco-efficiency), to provide an engaging vision for a positively conceived footprint on the planet – environmental, social and economic (eco-effectiveness).

C2C operates at various levels; Philosophy, Principles and Application Tools. These are described in other publications, but here is a quick outline of the Principles.

- *Everything is a nutrient for something else.* Use materials as nutrients to be safely cycled in continuous metabolisms: biological and technical. “Biological nutrients” can safely decompose in the Biosphere to build healthy soil. “Technical nutrients” are recyclable materials that can be returned to high-value uses in the Technosphere without contaminating the biosphere. Systems are also established to continuously and cost-effectively recover those materials from current uses and safely decompose or recycle them at a high level of quality.

Defined use in biological and technical nutrient cycles is an original feature of C2C first published in the early 1990s in peer-reviewed scientific journals.

- *Use current solar income.* Operations are planned to be ultimately powered by 100 percent renewable energy.
- *Celebrate diversity.* C2C enhances cultural diversity, conceptual creativity and ecosystem bio-diversity and well-being. Important features of that diversity include celebrating beauty, enjoyment and having fun !

In recent years, application of the Cradle to Cradle design protocol® has transformed the manufacture and use of many products throughout commerce and industry.

On a wider scale Cradle to Cradle® is used to view the urban environment as a collection of safe material metabolisms, energy and water flows, and cultural and ecological diversity, allowing enhanced livability and well-being for residents, the region and the world.

### HOW THE REGISTRY CREATES BENEFITS FOR STAKEHOLDERS

The Registry provides stakeholders with a claim to be recognized for innovation and quality in the marketplace. The Registry embraces the inspirational value of being beneficial instead of just having “less bad” reductions of impacts. Stakeholders who are recognized in the program will benefit from the acceleration of best practices for C2C-Inspired Elements in each recognized building or project.

### REGISTRY CATEGORIES AND INNOVATION TYPES

In The Registry, every award is a celebration and there are no comparative rankings. Award categories are initially organized into *buildings, area developments and urban systems*. The Registry considers these innovation types for the award;

### C2C-INSPIRED DELIGHTS

These are inexpensive quick-win features that inspire others to implement C2C elsewhere. The most important ingredients; innovation and fun!

Examples of Cradle to Cradle-Inspired “Delights” include (note; these are for inspiration only and not actual Registry entries) :

- C2C-inspired books & games.



Cradle to Cradle® for Kids

- Use kinetic energy from stairs or revolving doors to operate toys.



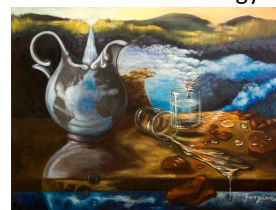
Revolving door generates electricity

- Generating fun and electricity together.



Kinetic energy dance floor

- Water and renewable energy art.



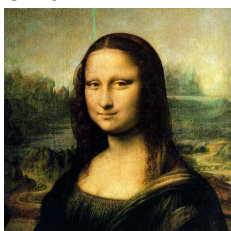
- Greenhouse managed by children to recycle CO<sub>2</sub> & rainwater & compost as nutrients.



- Educational tours of C2C inspired Elements in your building.
- Real-time flow-chart of nutrient flows through your building e.g. What happens to my nutrients after I flush the toilet?
- C2C-inspired Tweet or Downloadable apps or screensavers that tell a C2C-inspired story.
- Hotel guests sponsor a tree they plant.



- Removable personalized C2C-inspired room tiles guests can take home as souvenirs.



- Solar charged or kinetically charged wireless devices.



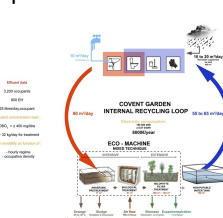
## C2C-INSPIRED ELEMENTS

More challenging than delight, these value-added building features measurably implement C2C at a substantive level. An Element usually consists of a system in a building. Examples of value-added C2C-Inspired Elements that measurably implement C2C (note these are for inspiration only and not actual Registry entries);

- Financial and planning tools that support C2C-Inspired Features. For example C2C innovation provisions & other contract tendering procedures.

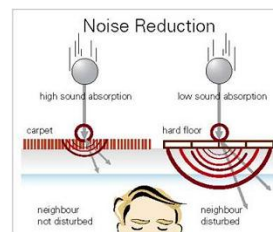


- Integrated systems for achieving C2C-defined beneficial air and water quality to improve productivity and well-being of occupants.



Autonomous water system Covent Garden Art&Build

- Features designed to provide a quiet environment that improve productivity by protecting occupants from chronic noise.



Desso Soundmaster® Carpet

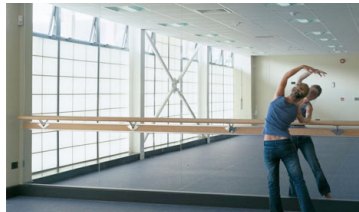
- Skin-and lung-safe surfaces and work-wear to improve well-being, air and water quality.



lcestone® counter tops



- Beneficial renewably-powered lighting systems integrated with natural light to improve productivity and well-being.



Cabot® translucent aerogel

- Integrated rainwater and effluent reuse for value-added water savings.



Bionutrient recycling system for communities, schools & hotels. O Instituto Ambiental

- Modular designs of building systems for value-added materials recovery.



Deconstructable visitor center.  
William McDonough & Partners Architects

- Systems to support species diversity, designed in ways that support well-being of occupants.



- C2C-defined structural materials to protect groundwater, define CO2 reuse, and add residual value for reuse.
- Maximal use of C2C-certified® products throughout a building to add value. The Registry is not a certification scheme but does celebrate the innovative integration of high-quality certified Elements.



- Materials Banking and Materials Passport systems to support materials pooling and reuse.
- 
- C2C-defined energy-positive building for value-added revenues and security of energy supply.

- Multifunctional designs to support equitable diversity of use.
- Designs that according to stakeholders add beauty to surroundings.
- Integrating C2C -Inspired Features to multiply value-added benefits.

#### EXAMPLE OF C2C-INSPIRED ELEMENT

Attached Table 1 is an example of how a Cradle to Cradle-Inspired Element supports C2C principles, intentions and goals of stakeholders by integrating diverse value-added functions. Integration is important.

Atria, also known as greenhouses or winter gardens, are a feature of many buildings but are often under-utilized. C2C principles, goals and application tools can be used to *maximize quality and generate a beneficial footprint* by integrating diverse features.

The characteristic that distinguishes this Element as C2C-Inspired is the integration of quality, added value, and beneficial impacts.

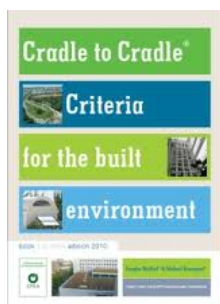
## SUPPORTING PUBLICATIONS

- **Cradle to Cradle® Criteria for the Built Environment.** Basis for Jury award. Available in English, Swedish, Dutch and later Spanish & Portuguese.
- **Quality Statement for C2C-Inspired Elements in Building Developments.** Customized evaluation allowing stakeholders to make more extensive claims about features in buildings.
- **Guide for C2C-Inspired Quality in Buildings.** Companion guide to the Registry and Quality Statement.

## REGISTRY OPERATION, AWARD AND VERIFICATION PROCEDURE

Entry to The Registry is awarded by the *Academic Chair, Cradle to Cradle for Innovation and Quality*, Rotterdam School of Management, with support from an advisory group of C2C-trained specialists.

The Registry Jury bases award decisions on the publication *Cradle to Cradle® Criteria for the Built Environment*.



Usually the jury will only consider buildings that contain multiple delights or Elements, but exceptions can be made for outstanding singular features.

The Registry is a web-based operation with minimal bureaucracy and low admission/use fees to cover administrative costs.

Most work for the application is done by the applicant according to a short questionnaire.

Applications for recognition are through registration application that includes submission of basic factual project data along with supporting materials such as: submission of narrative, photographs, video, data as available and as verified by the registrant.

The Registry relies partially on self-verification of achievement. However, the awarded project can have its claims wiki-verified by independent observers who work or live in or near the building. This effective verification process is without expensive inspections that pose a cost barrier to some applicants.

## IMPORTANT FAQs

**Costs?** Application fee schedule on the following page is based on approximate capital value and is far lower than for e.g. certifications.

**Can award recipients claim to have a Cradle to Cradle® building?** There is yet no such thing as a Cradle to Cradle® Building, but instead building systems that are on the way to C2C. Because of this The Registry celebrates outstanding Elements in a building development rather than buildings as a whole.

**How do you prevent greenwashing that focuses on just symbolic features?**

Similar to how Wikipedia self-governs.

- Elements are reviewed by a jury at the *Academic Chair, Cradle to Cradle for Innovation and Quality*.
- Added quality assurance is the peer community who can check every building.

As well, *Quality Statements* are provided for candidates wanting customized evaluations and verification. See Supporting Publications.



## APPLICATION FEES

The Beta formula for registration costs is based on encouraging small building owners to apply and large building developments to see it as affordable;

Value under €500K =	€500
€500K until €2 million =	€700
€2 million until €10 million =	€1,000
€10 million until €100 million =	€1,500
Over €100 million =	€3,000

There is no fee for humanitarian developments e.g. structures for disaster prevention & relief.

### Quality Statement Fee

The Quality Statement fee is determined according to the work required and depends on the complexity of the claim regarding C2C-Inspired Elements in the building development, and availability of documentation provided by the owner. The Chair might contract-out quality statement evaluations to a qualified evaluator depending on where the development is located.

## ALREADY-BUILT STRUCTURES

The Registry is for already-built or renovated structures rather than structures in planning or construction. You can still submit an inquiry during planning and construction but the evaluation will only be done after construction is completed.

## LANGUAGES

The operational language of The Registry is English but preliminary inquiries are accepted also in Dutch, Flemish, French, German, Mandarin, Portuguese and Spanish.

## LOOKING FOR SOMETHING ?

The Registry is still in Beta version and publications such as the *Quality Statement* and *Guide for C2C-Inspired Quality in Buildings* will be uploaded to this website in the upcoming weeks and months.

*Cradle to Cradle® Criteria for the Built Environment* can be ordered in the English language at;

<http://www.duurzaamgebouwd.nl/bookstore/cradle-to-cradle-criteria-for-the-built-environment-ebook>

Due to the generous support of the Government of The Netherlands the Dutch language version can be downloaded free in the right-hand-column at;

[http://rws.nl/kenniscentrum/innovatie/clusters/ruimte\\_en\\_duurzaamheid/index.aspx](http://rws.nl/kenniscentrum/innovatie/clusters/ruimte_en_duurzaamheid/index.aspx)

Other language versions are being published shortly. Watch this space !

## CONTACT US

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**TABLE 1 EXAMPLE OF HOW A CRADLE TO CRADLE-INSPIRED ELEMENT SUPPORTS C2C PRINCIPLES, INTENTIONS & GOALS FOR QUALITY**

C2C PRINCIPLES →→→	<div>----- Everything is a Resource for Something Else. "Waste=Food" -----</div> <div>Biodiversity, Conceptual Diversity, Cultural Diversity</div> <div>----- Current Solar Income -----</div>						
	Healthy Air & Climate	Healthy Water & Nutrient Recycling	Healthy Materials	Biodiversity Enhancement	Cultural Diversity, Quality of Life, & Multifunctionality	Mobility Enhancement	Renewable Energy-Positive
C2C QUALITY INTENTION →→→							
<b>C2C-INSPIRED ELEMENT</b> ↓↓↓  <b>ATRIUM</b>  Also known as;  <b>BUILDING INTEGRATED GREENHOUSE</b>  <b>or</b>  <b>WINTERGARDEN</b>	<b>MEASURABLE TECHNICAL GOAL</b>  Bio-filters capture & metabolise 50% of CO <sub>2</sub> & particulates from air in the building interior rising to 70% in 3 years, and re-introduce cleaner air to meeting rooms.  <b>FINANCIAL GOAL</b>  Evaluate savings from using CO <sub>2</sub> and compost to profitably grow vegetables and gain carbon credits.  Evaluate savings on HVAC filter replacement costs.  <b>ADDED VALUE</b>  Use unused rooftop or atrium space profitably.  Carbon credits potential.  Savings or revenues from growing fruits & vegetables.	<b>MEASURABLE TECHNICAL GOAL</b>  Capture 70% of rainwater on site for reuse & discharge into ecosystems, rising to 90% over 3 years.  <b>FINANCIAL GOAL</b>  Quantify savings on water fees & water reprocessing costs.  Quantify savings on water for urban agriculture & landscaping.  <b>ADDED VALUE</b>  Financial & supply security for; <ul style="list-style-type: none"> <li>• Future water fees,</li> <li>• Wastewater processing costs,</li> <li>• Irrigation water for urban agriculture &amp; landscaping.</li> </ul>	<b>MEASURABLE TECHNICAL GOAL</b>  Compost 50% of bionutrients used in the building, rising to 90% in 3 years.  Nutrients for plants e.g. soil, fertilizer are defined for the whole cycle by year 3.  <b>FINANCIAL GOAL</b>  Savings on maintenance & renovations with easier replacement of equipment & parts.  <b>ADDED VALUE</b>  Savings on waste management costs during maintenance & renovations.  Increase end-value of materials & structures so the building becomes an appreciated asset instead of depreciated demolition expense.	<b>MEASURABLE TECHNICAL GOAL</b>  Declare Atrium as biodiversity zone e.g; pond as fish habitat, trees as bee habitat, landscaping as topsoil enhancement zone. Date; Year 1 of operations.  <b>FINANCIAL GOAL</b>  Produce profitable urban agricultural products for restaurants or occupants. Year 1 of operations.  <b>AESTHETIC GOAL</b>  Establish five beehives to keep away wasps from public areas & for occupants to learn about pollination. Year 1 of operation.  <b>ADDED VALUE</b>  Added productivity from unused spaces e.g. rooftops.	<b>MEASURABLE TECHNICAL GOAL</b>  <i><b>Cultural diversity.</b></i> Integrate water recycling as art e.g. water walls, fountains Date; By completion of construction.  <i><b>Quality of Life &amp; Multifunctionality.</b></i> Atrium is a clean-air pre-school for children of occupants. Date; Year 1 operations.  <b>FINANCIAL GOAL</b>  Revenues from integrated use. Date; Year 1 of operations.  Enhance lease value by offering added services to occupants.  <b>FUN GOAL</b>  Establish nice places to eat, work, & relax.  <b>ADDED VALUE</b>  Rentable space for diverse uses.	<b>MEASURABLE TECHNICAL GOAL</b>  Improve mobility between buildings in cold or hot climates by moderating temperatures and creating integrated spaces instead of divided ones. Date; By end of construction.  <b>FINANCIAL GOAL</b>  Business model from charging electric vehicles. Date; By beginning of construction.  <b>SOCIAL GOAL</b>  Use Atria to establish diverse meeting zones.  <b>ADDED VALUE</b>  Improve mobility in the building for occupants.	<b>MEASURABLE TECHNICAL GOAL</b>  Atrium is a functional part of the heating & cooling system, using solar energy for photosynthesis, supporting heating and cooling of the building. Date; By year 1 of operations.  <b>FINANCIAL GOAL</b>  By moderating temperature extremes, using current solar income, and using excess heat for growth, atrium supports renewable energy cost-effectiveness. Date; Year 1 of operations.  <b>ADDED VALUE</b>  Savings on heating, cooling, ventilation & lighting.