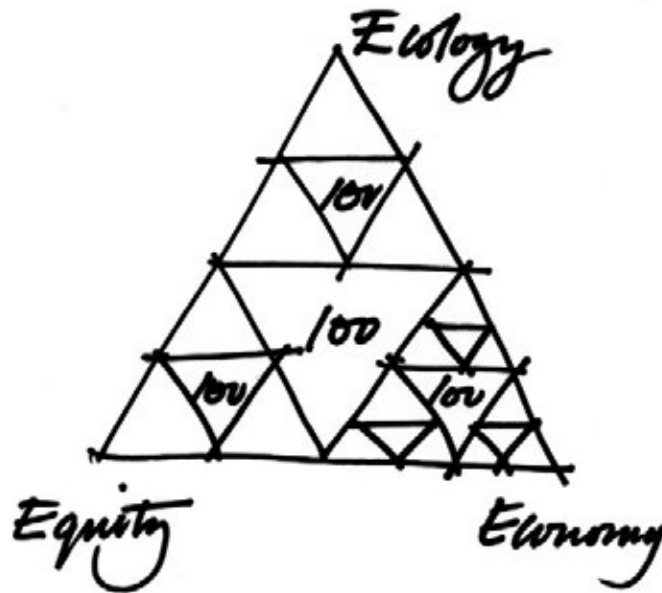


NET-POSITIVE: WAGING PEACE THROUGH COMMERCE BY DESIGN

THE WORK OF WILLIAM McDONOUGH

CRADLE TO CRADLE • CIRCULAR ECONOMY • CIRCULAR CARBON ECONOMY
ESG • SUSTAINABLE DEVELOPMENT GOALS



This book, produced and published by McDonough Innovation, LLC, highlights William McDonough’s integrated approach to design solutions – and refers to his three companies, McDonough Innovation, MBDC, and William McDonough + Partners

To work with Mr. McDonough and his companies please send a request to media@mcdonough.com.

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DESIGN POSITIVE

William McDonough is a globally recognized leader in sustainable design and development. He has written and lectured extensively on the role of design in solving the most pressing ESG challenges faced by corporations, governments and organizations. He applies the principles of his Cradle to Cradle Design™ philosophy at all scales through his three companies:



McDONOUGH INNOVATION

Through McDonough Innovation, William McDonough provides targeted ideas, product concepts and solutions to a wide range of sustainable growth issues faced by governments, companies and NGOs. His values-driven approach helps nations and companies embed sustainable growth principles into their culture and to advance progress toward their positive vision.



WILLIAM MCDONOUGH + PARTNERS

William McDonough + Partners has designed notable landmark buildings in the sustainability movement including Ford's River Rouge plant in Dearborn, Michigan; Herman Miller's GreenHouse factory in Holland, Michigan; Nike's European headquarters in Hilversum, The Netherlands; and YouTube's headquarters in Silicon Valley, California.



MBDC, LLC.

MBDC are the original creators and among the foremost implementers of the Cradle to Cradle Certified® Products Program, an independent, science-based, third-party, multi-attribute product standard recognized by the world's leading retailers, including Amazon, Home Depot, Walgreens and Walmart. MBDC's services help clients understand and implement the Cradle to Cradle Design™ Framework on multiple levels, from materials and products to packaging and corporate leadership.

Our goal is a delightfully diverse, safe, healthy, and just world, with clean air, water, soil and power – economically, equitably, ecologically and elegantly enjoyed.

To work with Mr. McDonough and his companies send request to media@mcdonough.com.

THE HANNOVER PRINCIPLES: DESIGN FOR SUSTAINABILITY

The Hannover Principles continue to inform the ever-evolving conversation on design for sustainability. The City of Hannover, Germany commissioned William McDonough to lead the development of The Hannover Principles (1992) to guide the design of the 2000 World's Fair. The Hannover Principles sought to reframe design for sustainability as both a signal of positive human intentions and a means to achieving them. They are committed to transformation and growth in the understanding of our interdependence with nature and may be adapted as our knowledge of the world evolves.

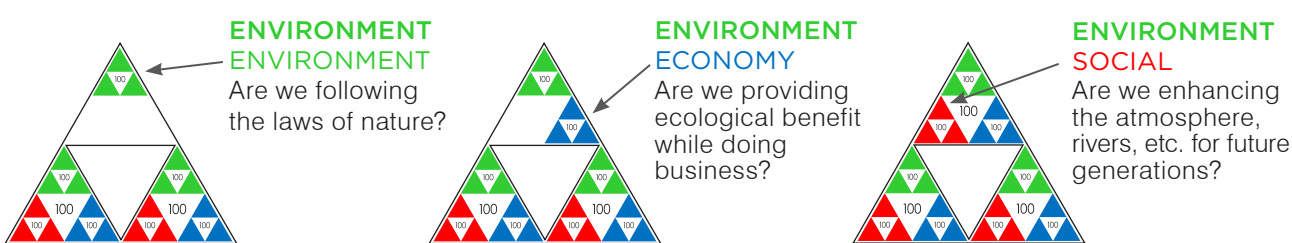
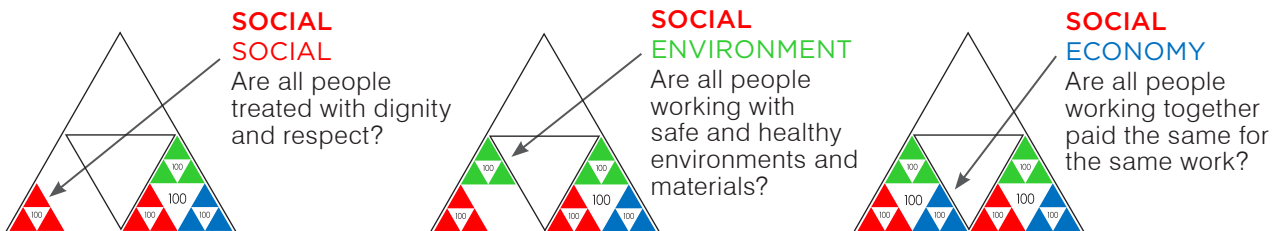
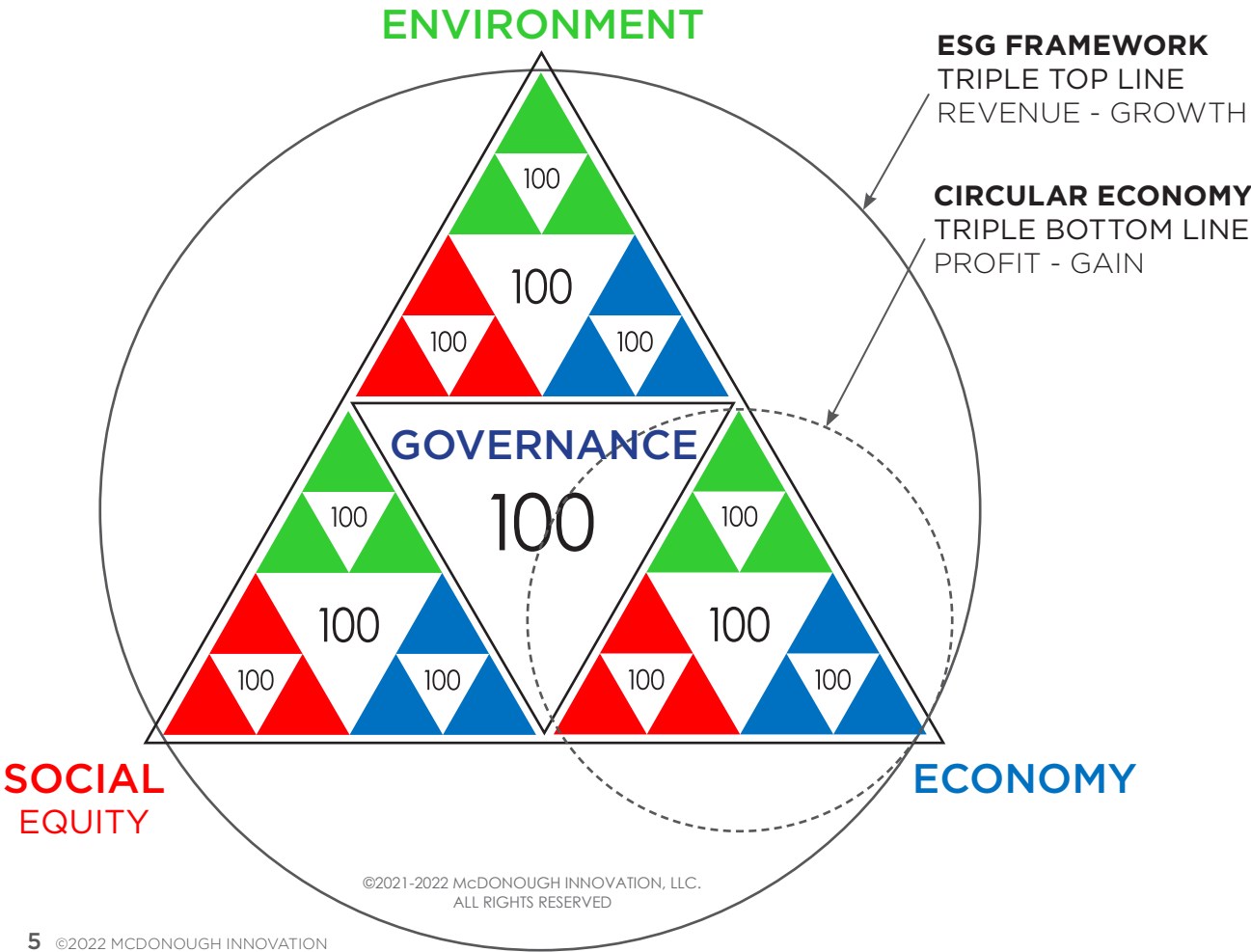
- 1 Insist on the right of humanity and nature to coexist** in a healthy, supportive, diverse and sustainable condition.
- 2 Recognize interdependence.** The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale. Expand design considerations to recognize even distant effects.
- 3 Respect relationships between spirit and matter.** Consider all aspects of human settlement, including community, dwelling, industry and trade, in terms of existing and evolving connections between spiritual and material consciousness.

- 4 Accept responsibility for the consequences of design** decisions upon human well-being, the viability of natural systems and their right to coexist.
- 5 Create safe objects of long-term value.** Do not burden future generations with requirements for maintenance or vigilant administration of potential dangers due to the careless creation of products, processes or standards.
- 6 Eliminate the concept of waste.** Evaluate and optimize the full life cycle of products and processes to approach the state of natural systems, in which there is no waste.
- 7 Rely on natural energy flows.** Human designs should, like the living world, derive their creative force from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.
- 8 Understand the limitations of design.** No human creation lasts forever, and design does not solve all problems. Those who create and plan should practice humility in the face of nature. Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled.
- 9 Seek constant improvement by the sharing of knowledge.** Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long-term sustainable considerations with ethical responsibility and to reestablish the integral relationship between natural processes and human activity.

ESG DESIGN FRAMEWORK™

The Triple Top Line

Enterprises of all kinds can design using McDonough Innovation's ESG Design Framework, recognizing all stakeholders, not just shareholders. It is a design tool based on environmental, social and economic principles connected by coherent governance. The goal of the tool is to scrutinize and optimize all values represented by the triangle, to render the information visible, and encourage constant improvement.

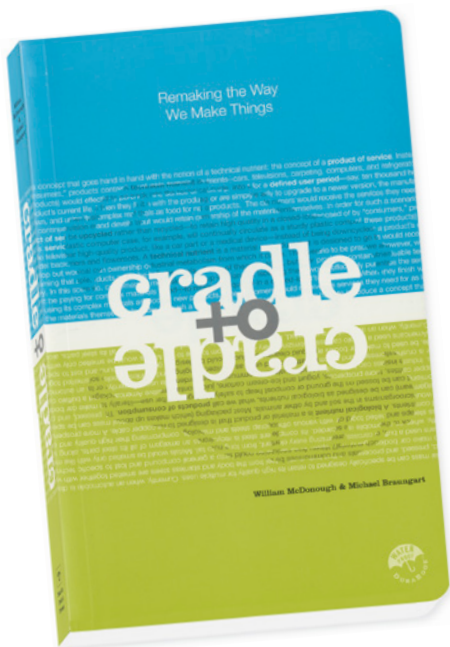


Questions above are illustrative examples.

diagrams © 2021-2022 McDONOUGH INNOVATION, LLC.
based on Cradle to Cradle: Remaking the Way We Make Things, 2002

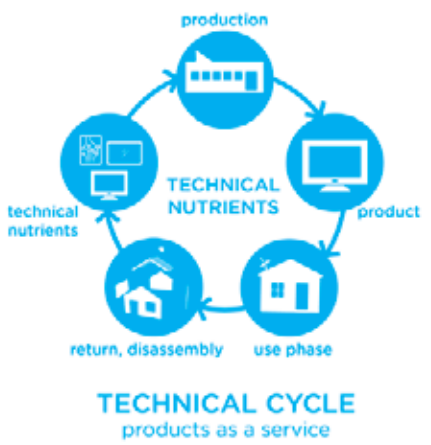
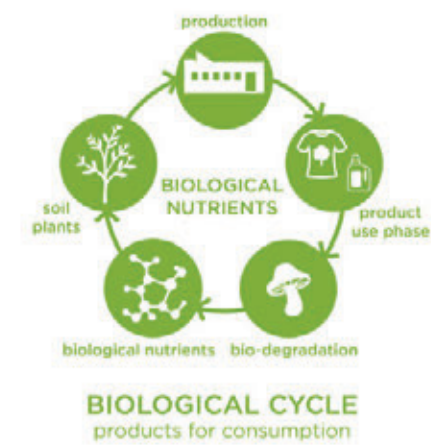
CRADLE TO CRADLE

In their 2002 book, *Cradle to Cradle: Remaking the Way We Make Things*, architect William McDonough and chemist Michael Braungart presented a science-based design framework that eliminates the concept of waste and provides enduring benefits for society, from safe materials and circular economies to clean air, water and energy.



Waste Equals Food
Use Current Solar Income
Respect Diversity

The book put forward a Cradle to Cradle Design™ framework characterized by three principles derived from nature:



diagrams ©1995-2022 MBDC, LLC.

EVERYTHING IS A RESOURCE FOR SOMETHING ELSE

In nature, the “waste” of one system becomes food for another. Everything can be designed to be disassembled and safely returned to the soil as **biological nutrients**, or reutilized as high-quality materials for new products as **technical nutrients** without contamination.

USE CLEAN AND RENEWABLE ENERGY

Living things thrive on the energy of current solar income. Similarly, human constructs can utilize clean and renewable energy in many forms—such as solar, wind, geothermal, gravitational energy and other energy systems being developed today—thereby capitalizing on these abundant resources while supporting human and environmental health.

CELEBRATE DIVERSITY

Around the world, geology, hydrology, photosynthesis and nutrient cycling, adapted to locale, yield an astonishing diversity of natural and cultural life. Designs that respond to the challenges and opportunities offered by each place fit elegantly and effectively into their own niches.

Rather than seeking to minimize the harm we inflict, **Cradle to Cradle reframes design as a positive, regenerative force—one that creates footprints to delight in, not lament.** This paradigm shift reveals opportunities to improve quality, increase value and spur innovation. It inspires us to constantly seek improvement in our designs, and to share our discoveries with others.

FROM VALUES TO VALUE™

Using a design lens and multi-disciplinary approach, we work with our clients to innovate new systems and solutions for some of the toughest challenges they face. Our process begins with your values.

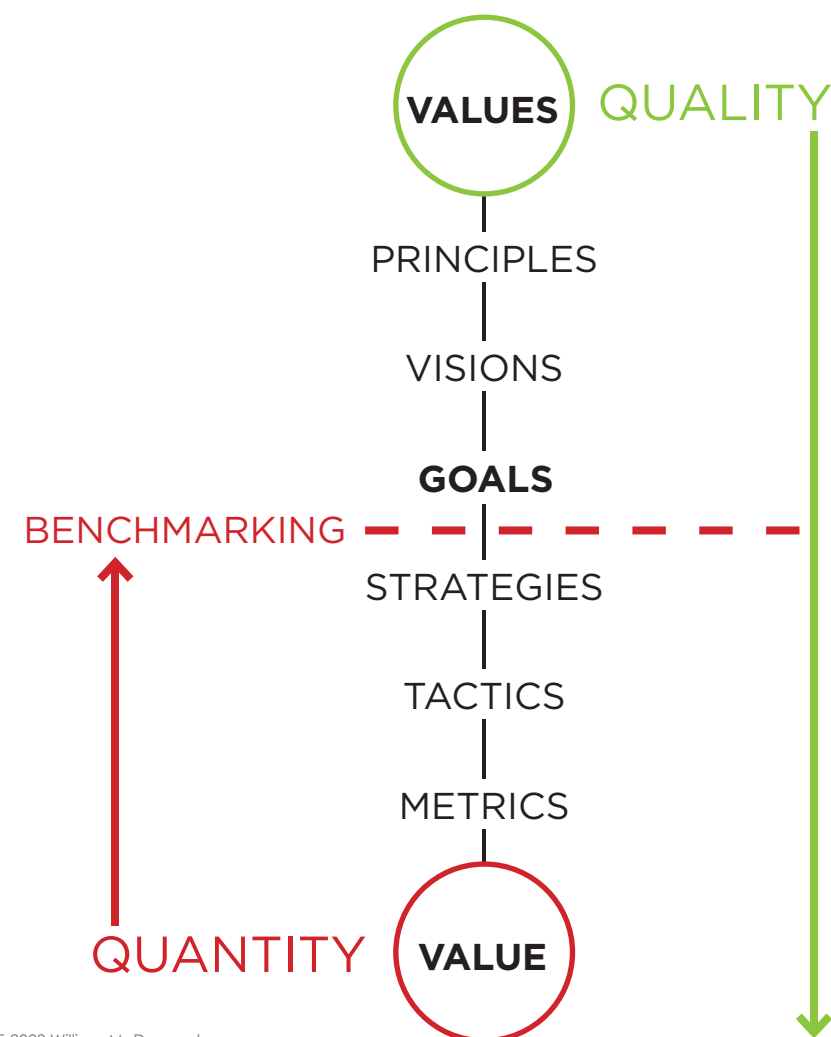


diagram © 1995-2022 William McDonough

VALUES	What’s your “Compass”?
PRINCIPLES	Against what fulcrum do you lean your levers of change?
VISIONS	What does the desirable future look like to you?
GOALS	What do you want to achieve that gets you up in the morning? Where do you desire to move the world?
STRATEGIES	What is your plan? What is your lever?
TACTICS	What do you do every day to pursue your goals or express your values?
METRICS	How do you measure success? What do you consider statistically significant?
VALUE	Have you made positive contributions to the world and future generations?

THE FIVE GOODS™

A Design Positive Framework™ inspired by *Cradle to Cradle*

Using the intellectual and practical filters of *Cradle to Cradle*, design solutions are viewed as an aggregation of nutrient metabolisms, energy and water flows, and cultural and ecological biodiversity. The approach is articulated through five categories of positive development:



GOOD MATERIALS – Safe, healthy, biological and technical nutrients
Ideally, everything that went into a product would be beneficial not just for the product itself, but also for human and ecological health. Companies wouldn't have to work at reducing harmful inputs because they wouldn't include those inputs to begin with.



GOOD ECONOMY – Circular, sharing and shared
When companies finish using or reusing a product, they would ideally break it up into valued resources flowing in a continuous loop of natural and human activity. Nothing would get wasted.



GOOD ENERGY – Clean and renewable
The goal here is to rely on energy that sustains resources rather than consumes them and/or endangers people. Instead of fossil fuels that take carbon from the ground and release it into the atmosphere, or nuclear power that generates harmful byproducts, companies can use renewable sources that leave the world as well endowed as before.



GOOD WATER – Clean and available
The aspiration is a process that leaves water supplies as good as or better than they were before, ideally at drinking water quality. Each process stage would use only readily available water, and leave that water so clean that it can be continually reused or released for the benefit of the surrounding community or ecosystem.



GOOD LIVES – Safe, creative and dignified
We'd like our economy to be good not just in the materials, but also in how it treats the people who make it function. Ideally it would promote individual human dignity, with safe working conditions and accommodation for family living circumstances. It would also promote fairness in wages and prices.

THE SUSTAINABLE DEVELOPMENT GOALS

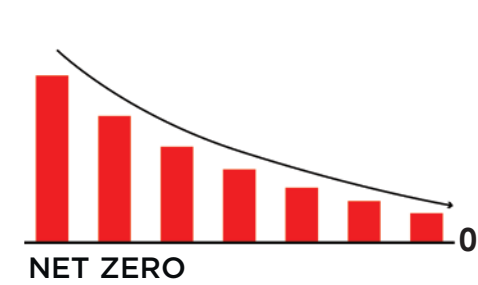
When companies start from a Five Goods mindset, they can design their products and processes upfront to promote holistic goodness. This approach provides a framework to achieve progress toward all the Sustainable Development Goals.



ACHIEVING NET POSITIVE

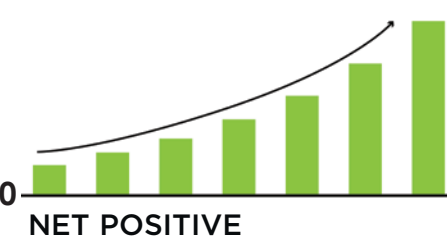
The Upcycle

Drawing on a decade of lessons in putting Cradle to Cradle Design™ concepts into practice around the world, McDonough and Braungart’s book, *The Upcycle: Beyond Sustainability—Designing for Abundance*, published in 2013, presents a persuasive and inspiring argument for moving beyond conventional approaches to sustainability that seek to merely minimize damage to the environment and human health. By adopting Cradle to Cradle values and principles, and seeking continuous improvement, companies are able to direct innovation in a coherent and positive trajectory.



**ECO-EFFICIENT APPROACH =
“LESS BAD” TRAJECTORY**

- Reduce Carbon
- Minimize Chemicals of Concern
- Energy Efficient
- Reduce Water Consumption
- Goal of Zero Hazards

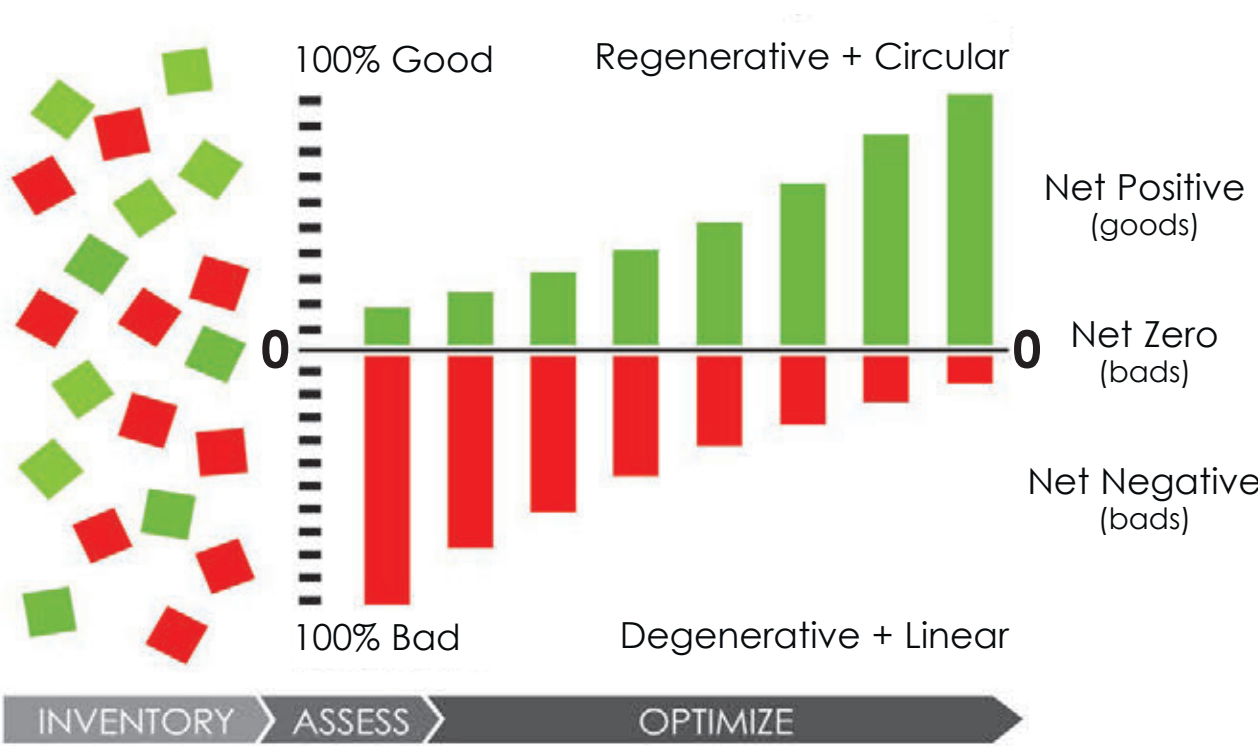


**ECO-EFFECTIVE APPROACH =
“MORE GOOD” TRAJECTORY**

- Increase Positive Ingredients
- Energy Positive
- Improved Water Quality
- Increased Biodiversity
- Goal of 100% Positive / Beneficial Products, Processes and Systems

NET-POSITIVE CHART INNOVATION + CONTINUOUS IMPROVEMENT

The Net-Positive Chart enables many industry sectors, including product manufacturers, to **1) inventory**, **2) assess** and then **3) optimize** products, processes and systems with positive intentions and beneficial goals.



Net-Positive Chart © 2021-2022 McDonough Innovation
Based on The Upcycle Chart © 1995-2021 MBDC, LLC.

CRADLE TO CRADLE CERTIFIED®

The Cradle to Cradle Certified® is a globally recognized “gold standard,” science-based quality certification. It acknowledges continuous improvement and innovation of products and processes toward the goal of being not just “less bad” (net zero) but also “more good” (net positive) for people and the planet.



MBDC transferred an exclusive license for the certification program and methodology in 2010 to the Cradle to Cradle Products Innovation Institute, co-founded by William McDonough. Today, the Institute owns the certification program. It sets, develops and maintains the global standard through a multi-stakeholder process and runs the related Products Program.

Cradle to Cradle Certified® Products Program

Products and materials from any industry and country that are eligible to apply for certification. Since the program began, more than 700 companies from over 40 countries have participated in the Cradle to Cradle Certified® Products Program. The Cradle to Cradle Products Innovation Institute has issued over 1500 certificates covering more than 10,000 certified products in a variety of categories, including building materials, interior design products, textiles, fabrics, cosmetics, home care products, paper, packaging and polymers.

Levels of Achievement

There are four levels of product certification: Bronze, Silver, Gold and Platinum. In order to be certified at a certain level, a product must meet the minimum criteria for that level in all five criteria categories. The criteria in each category becoming increasingly demanding with each level of certification.

Version 4.0

The Cradle to Cradle Products Innovation Institute released Version 4.0 of the certification program in March 2021. This includes key updates for Product Circularity, Social Fairness and Clean Air & Climate Protection.

THE CRADLE TO CRADLE CERTIFIED® PRODUCT STANDARD

Cradle to Cradle Certified Version 4.0 is a comprehensive one-standard solution for addressing the critical sustainability and circularity objectives that define products made for tomorrow. The multi-attribute product standard continues to be developed, maintained and administered by the Cradle to Cradle Products Innovation Institute, an independent, third-party, not-for-profit organization. Products are assessed in five categories:



MATERIAL HEALTH: ensuring materials are safe for humans and the environment



PRODUCT CIRCULARITY: enabling a circular economy through regenerative products and process design



CLEAN AIR & CLIMATE PROTECTION: protecting clean air, promoting renewable energy, and reducing harmful emissions



WATER & SOIL STEWARDSHIP: safeguarding clean water and healthy soils



SOCIAL FAIRNESS: respecting human rights and contributing to a fair and equitable society

C2C Certified® Product Standard

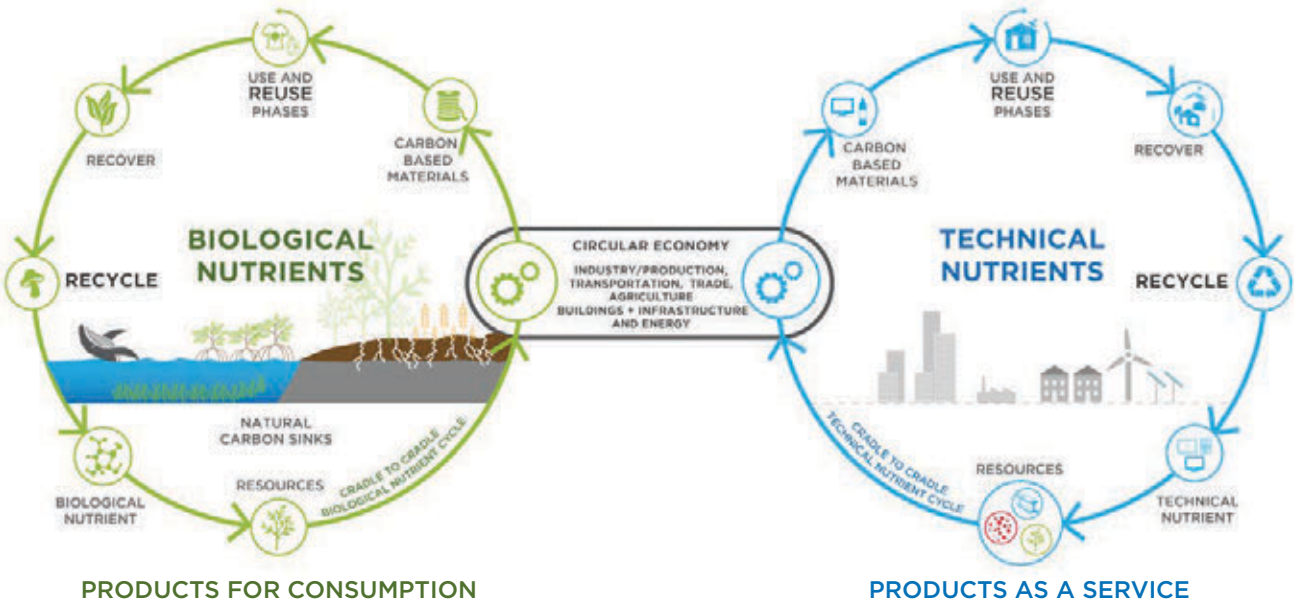
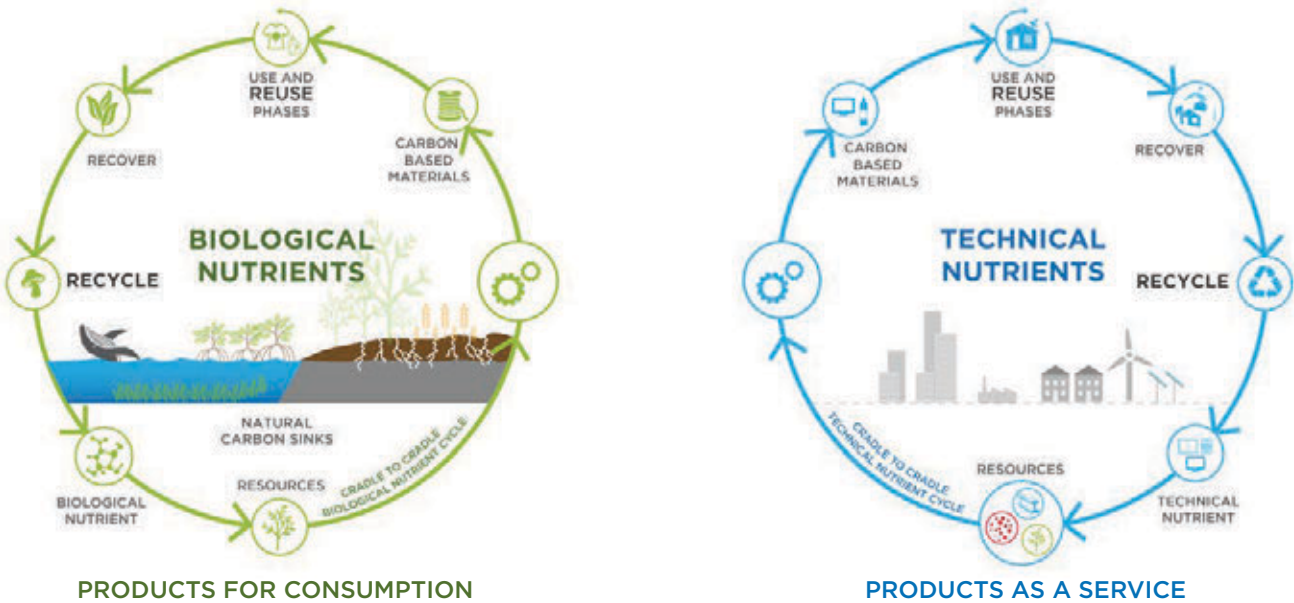
THE CIRCULAR ECONOMY CONCEPT

Inspired by *Cradle to Cradle*

As a model for design at all scales from the molecule to cities and regions, *Cradle to Cradle* is inspired by nature's principles where waste equals food, clean renewable energy is utilized and diversity is celebrated.

The Circular Economy is a resourceful economic system and innovation engine, providing benefits to society in the present and the future. It is designed to continuously recirculate clean materials, energy, water and human ingenuity. In essence, the Circular Economy puts the 're' back in resources.

While the Circular Economy is the critical part of the quantification of material flows, *Cradle to Cradle* calls for a **safe then circular** qualification of materials, processes and practices first, moving from linear to regenerative 'circular' systems of biological and technical nutrient production and logistics and avoiding the recirculation of harmful chemistry.

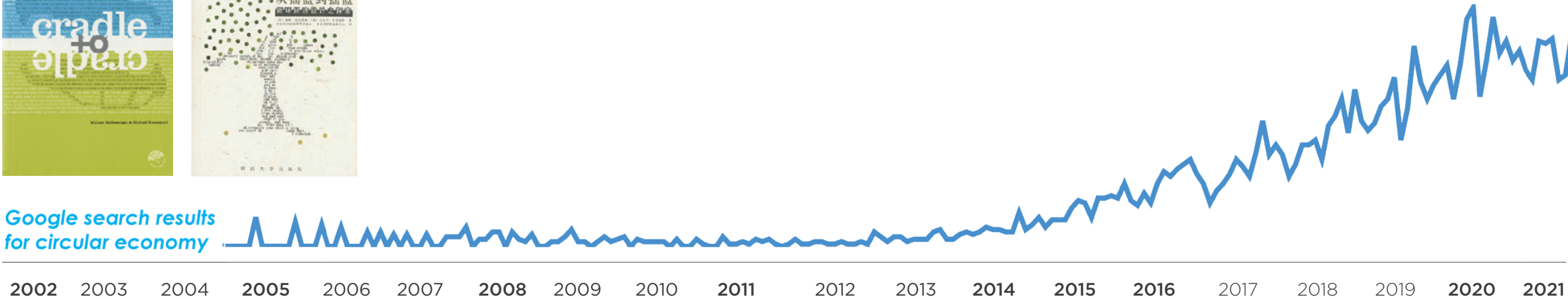


HISTORY OF THE CIRCULAR ECONOMY

2002 William McDonough and Michael Braungart publish <i>Cradle to Cradle: Remaking the Way We Make Things</i>	2005 The Chinese Edition of <i>Cradle to Cradle</i> is published as: <i>Cradle to Cradle: The Design of the Circular Economy</i>	2011 China Announces their 12 th Five-Year Plan called “The Promotion of the Circular Economy”	2014 The World Economic Forum commits to the circular economy. William McDonough is named Chair of the first Meta-Council on the Circular Economy	2015 The Ellen MacArthur Foundation publishes “Growth Within: a circular economy for competitive Europe” and “Delivering the circular economy: a toolkit for policymakers”	2016 China begins the 13th Five-Year Plan “Implementation of the Circular Economy” The Netherlands expresses a commitment to the circular economy	2020 William McDonough invited to give G20 opening speeches on Circular Carbon Economy	2021 150+ brands, including L’Oréal, Unilever and Walmart, pledge to use Extended Producer Responsibility (EPR) to achieve a Circular Economy
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Google search results for circular economy



CARBON IS NOT THE ENEMY

Nature, November 2016

William McDonough has developed a **New Language for Carbon** that seeks to clarify the terms typically used to describe efforts to reduce carbon emissions and define new, innovative ways in which carbon can be used safely, productively and profitably. In this new paradigm, which was originally published in *Nature*, the life-giving carbon cycle becomes a model for human designs, enabling us to cultivate urban food systems and closed-loop flows of durable materials in which carbon is an asset rather than a liability.

Carbon is not the enemy. Climate change is the result of breakdowns in the carbon cycle caused by us: it is a design failure. Anthropogenic greenhouse gases in the atmosphere make airborne carbon a material in the wrong place, at the wrong dose and wrong duration. It is we who have made carbon a toxin—like lead in our drinking water. In the right place, carbon is a resource and tool.

The world's current carbon strategy aims to promote a goal of zero. Predominant language currently includes words such as “low carbon,” “zero carbon,” “negative carbon” and even a “war on carbon.”

The new language signals positive intentions, leading us to do more good rather than simply less bad. It identifies three categories of carbon:

LIVING CARBON: organic, flowing in biological cycles, providing fresh food, healthy forests and fertile soil; something we want to cultivate and grow

DURABLE CARBON: locked in stable solids such as coal and limestone or recyclable polymers that are used and reused; ranges from reusable fibers like paper and cloth, to building and infrastructure elements that can last for generations and then be reused

FUGITIVE CARBON: has ended up somewhere unwanted and can be toxic; includes carbon dioxide released into the atmosphere by burning fossil fuels, ‘waste to energy’ plants, methane leaks, deforestation, much industrial agriculture and urban development

Working carbon is a subset of all three categories and defined as a material being put to human use. For example, *working living carbon* is cultivated in agricultural systems. *Working durable carbon* is recycled, reused and reprocessed in circular technical systems; and *working fugitive carbon* includes fossil fuels used for power.

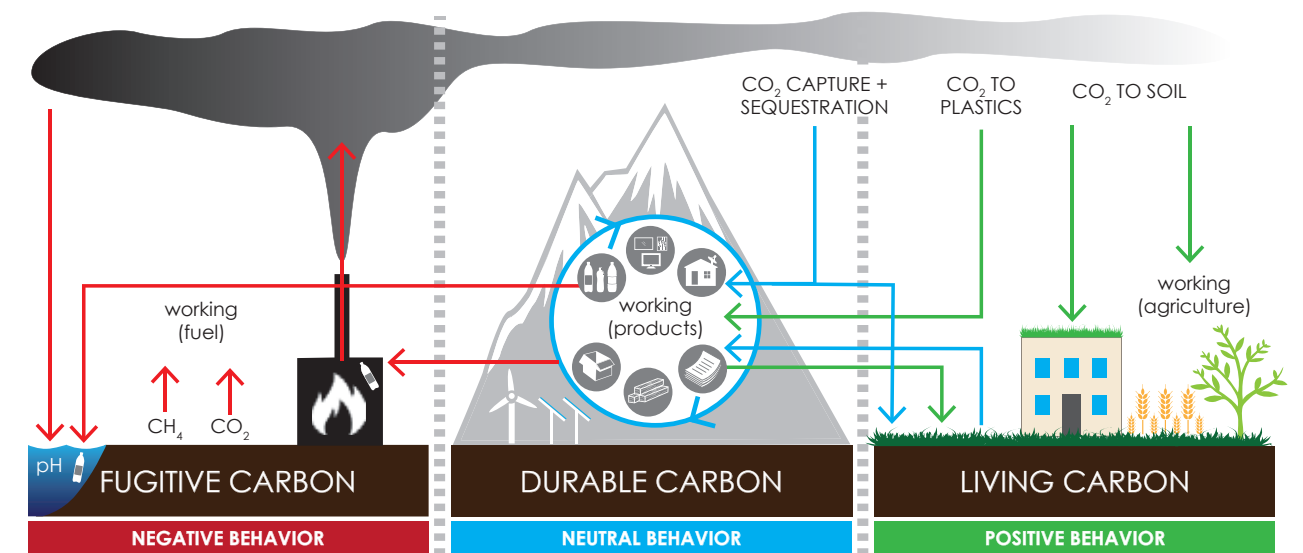
The new language also identifies three strategies for carbon management and climate change:

POSITIVE BEHAVIOR: actions converting atmospheric carbon to forms that enhance soil nutrition or to durable forms such as polymers and solid aggregates; also recycling of carbon into nutrients from organic materials, food waste, compostable polymers and sewers

NEUTRAL BEHAVIOR: actions that transform or maintain carbon in durable Earth-bound forms and cycles across generations; or renewable energy such as solar, wind and hydropower that do not release carbon

NEGATIVE BEHAVIOR: actions that pollute the land, water and atmosphere with various forms of carbon, for example, CO₂ and methane into the atmosphere or plastics in the ocean

Offering an inspiring model for climate action begins with changing the way we talk about carbon. Our goal is for all to embrace this new language and work toward a Carbon Positive design framework; and in doing so we may together support a delightfully diverse, safe, healthy and just world—with clean air, soil, water and energy—that is economically, equitably, ecologically and elegantly enjoyed.

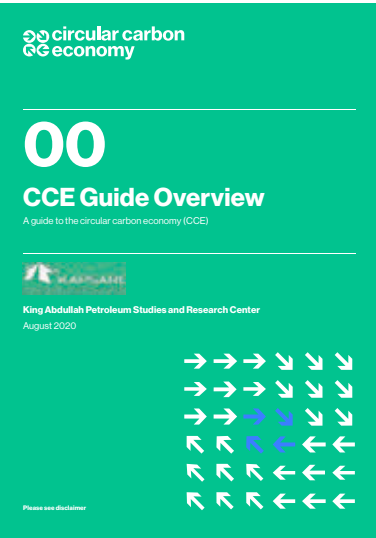


²Originally published as "Carbon is not the enemy" in *Nature*, 17 November 2016, Vol. 539, pages 349-351

CIRCULAR CARBON ECONOMY

The Circular Carbon Economy concept serves as a framework for effective carbon management for both carbon-based materials and carbon-based sources of energy.

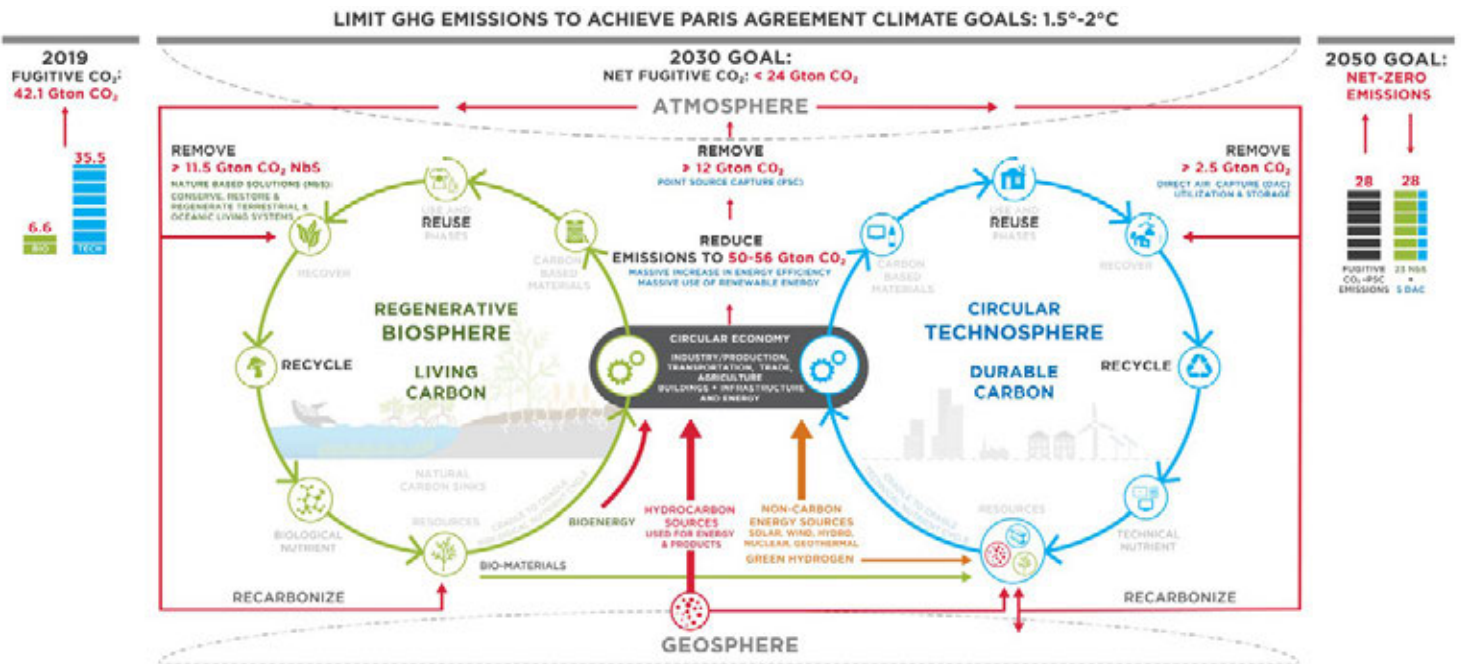
The Circular Carbon Economy recognizes carbon's multiple forms and benefits while defining positive ways for carbon to be used safely, productively and profitably. Guided by Cradle to Cradle Design's biological and technical nutrient cycles, the Circular Carbon Economy is designed to directly address the climate crisis. With these two distinct carbon cycles, the intention is to reduce, reuse, recycle and recover carbon-based materials and hydrocarbon energy sources in ways which eliminate waste, support regenerative growth and restore the Earth's natural abundance and diversity. In this framework, biological nutrients are safely cycled to accrue living carbon into the **Regenerative Biosphere** while technical nutrients are safely used, reused, recycled and returned to the **Circular Technosphere** across generations of economic growth and prosperity.



The G20 Presidency invited William McDonough to open the March G20 Climate Stewardship Working Group and Energy Sustainability Working Group meetings by presenting the Circular Carbon Economy concept. McDonough collaborated with marine biologist, Carlos Duarte, on this concept which integrates innovative business models of the larger circular economy where carbon is both a valuable material and a valuable energy source.

McDonough also provided guidance and contributed to KAPSARC's *CCE Guide Overview*, published in August 2020. This report introduces the concept of the Circular Carbon Economy and serves as an overview of the CCE Guide (www.cceguide.org). The guide consists of eight reports at the time of its launch and additional reports may be added to it over time.

In November 2020, world leaders encouraged the use of the Circular Carbon Economy framework.



CIRCULAR CARBON ECONOMY

diagram ©2020-2022 McDONOUGH INNOVATION, LLC. – Original Concept: February 2020
This Version: March 2021 – William McDonough with Carlos Duarte

“Building upon Cradle to Cradle and the New Language of Carbon, we can build a framework for carbon materials management that embraces the good intentions of the Three Rs (recycle, reduce and reuse) while seeking to improve upon their performance, adding to the traditional hierarchy new principles to eliminate the concept of waste, enable effective material flows and create a truly sustainable carbon economy that is both safe and circular.

To the Three Rs, we add a fourth - Remove. Let us seek to identify, encourage and implement strategies to remove fugitive carbon from our oceans, lands and atmosphere.”

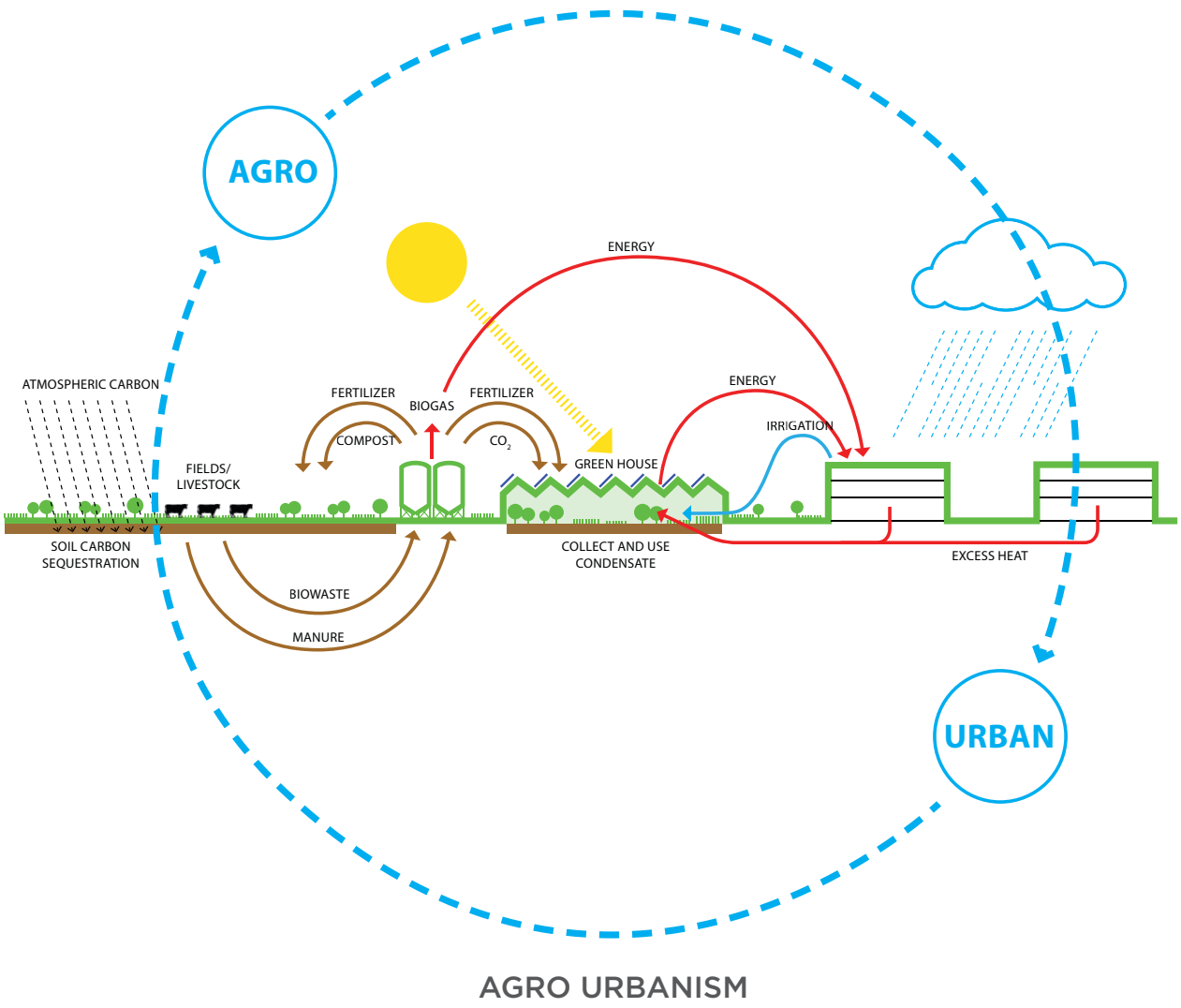
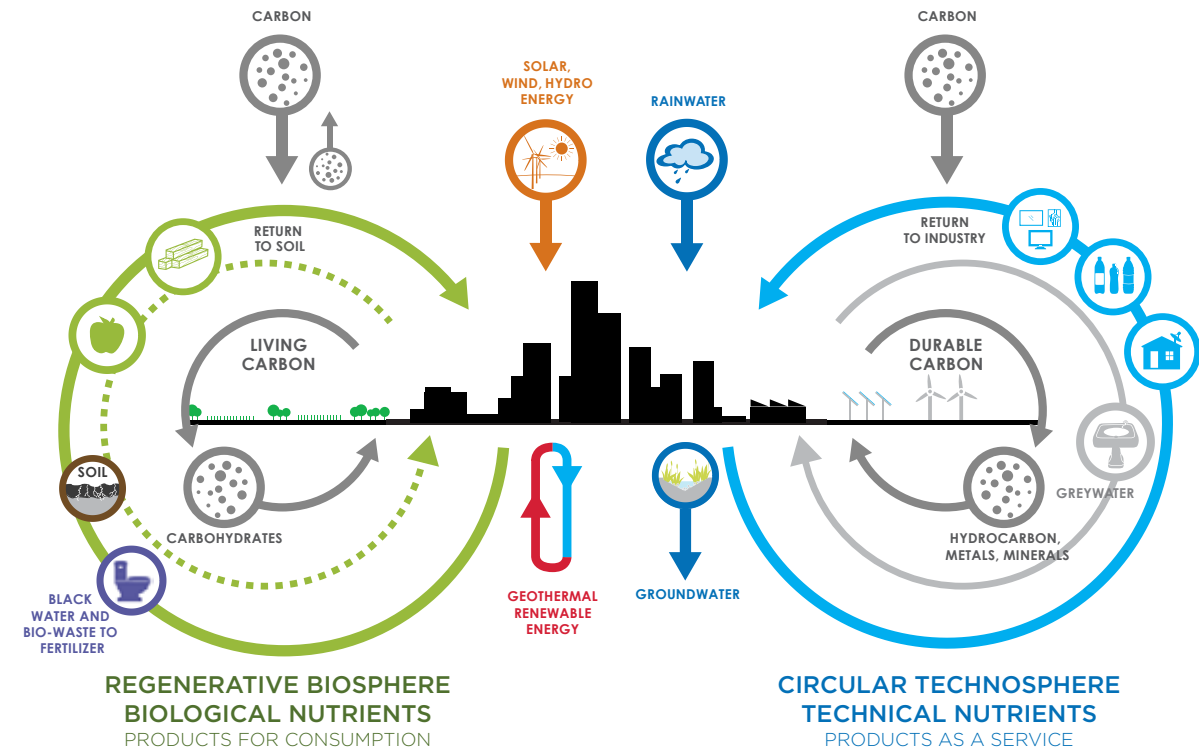
–William McDonough

THE NET-POSITIVE CARBON CITY

William McDonough's concept for the Net-Positive Carbon City brings the new language for carbon into a tangible design framework.

The Net-Positive Carbon City integrates agriculture, regenerative land management practices and urban design at a regional and international scale. It recognizes both local and distant effects of cities and envisions a holistic, synergistic system to transform fugitive carbon into durable carbon, such as plastics and building materials, as well as into living carbon, such as healthy soils, gardens, crops and landscapes.

City infrastructure adapts to the new idea: for example, sewage treatment plants are reconceived as fertilizer factories and intensive integrated agriculture systems—what we call solar orchards—provide clean energy, clean food, clean water and jobs simultaneously.



diagrams ©2016-2022 William McDonough + Partners

CRADLE TO CRADLE DESIGN™

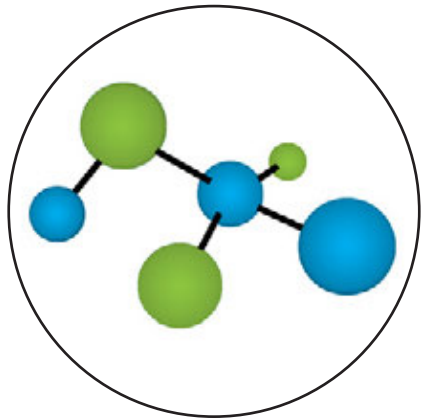
The Qualification of the Circular Economy

Inspired by the Cradle to Cradle Design Framework, our multi-disciplinary team innovates for the circular economy at all scales.

“The circular economy is a resourceful economic system and innovation engine, providing benefits to society in the present and the future. It is designed to endlessly recirculate clean materials, energy, water and human ingenuity. In essence, the circular economy puts the ‘re’ back in resources.”

–William McDonough

FROM THE MOLECULE...



Science-Based Analysis
to the Parts per Million
Material Health Assessments
Product Optimization

TO THE PRODUCT...



Product and Packaging Design
Assessments for the Cradle to Cradle
Certified® Products Program:
Globally Recognized Standard
Multi-Attribute
Third-Party Verified

TO BUILDINGS,
COMMUNITIES
AND CITIES...




Architecture
Built Environment Consulting
Urban Strategy
City Visioning / Principles
Renewable Energy Optimization

TO REGIONS,
COUNTRIES
AND THE PLANET.



Strategic Thinking
CEO / Government Advising
International Speeches
Business Consulting

A photograph of William McDonough, an older man with grey hair, wearing a dark turtleneck and a dark blazer. He is standing on a stage, illuminated by blue light. He is holding a small object in his right hand and has a microphone clipped to his ear. The background is dark and out of focus.

“William McDonough
is the mastermind of
sustainable design.”

– Vice President Al Gore

“McDonough’s utopianism
is grounded in a unified
philosophy that—in
demonstrable and
practical ways—is
changing the design
of the world.”

Time Magazine,
“Hero for the Planet”

McDONOUGH INNOVATION
DESIGN FOR THE CIRCULAR ECONOMY™

McDONOUGH INNOVATION

Design for the Circular Economy™

ESG ADVISORY

- Devise organizational structure and governance aligned with Cradle to Cradle Design™
- Advise strategy for Cradle to Cradle Certified® Products Program assessments
- Customize and facilitate workshops for employees and value chain partners
- Advise and coach executives on ESG visioning, strategies and storytelling
- Deliver keynotes and lectures on ESG and Design for the Circular Economy™

ESG DESIGN

- Reimagine packaging design for *Cradle to Cradle's* biological and technical cycles
- Develop conceptual designs at multiple scales
- Advise development and selection of materials for product development
- Develop new products for various industries and uses

Select organizations who have collaborated with William McDonough and his companies to pursue their sustainability and circular economy goals:





FORTUNE

WORLD'S
50 GREATEST
LEADERS

William McDonough is named one of *Fortune's* World's 50 Greatest Leaders (2019)

WILLIAM McDONOUGH, FAIA, INT. FRIBA

Architect, Advisor, Author, Speaker

William McDonough has earned the reputation of being “the leading environmental architect of our time.” After building the first solar heated house in Ireland (1976), he designed the first “green office” in New York for the Environmental Defense Fund (1985) which set the modern green building movement in motion, inspired the formation of the U.S. Green Building Council and established many of the principles and practices that have come to define sustainable design.

Landmark projects—Herman Miller’s “Greenhouse” Factory and Offices; Gap, Inc.’s Corporate Campus (now YouTube’s headquarters); and Nike’s European Headquarters—were followed by other commissions that have become flagships of 21st century environmental design: Ford’s River Rouge, widely celebrated for its 10-acre “living roof”; NASA’s Sustainability Base, the “first space station on Earth” and one of the most innovative buildings in the federal portfolio; and Park 20|20 in the Netherlands, a new model of mixed-use, transit-oriented, Cradle to Cradle Design™-inspired urban development.

Time magazine named McDonough “Hero for the Planet,” stating that his “utopianism is grounded in a unified philosophy that—in demonstrable and practical ways—is changing the design of the world.” In 2019 *Fortune* Magazine named McDonough one of the World’s 50 Greatest Leaders for his work in advancing Design for the Circular Economy™. McDonough is co-creator of the Cradle to Cradle Design™ framework and led the founding

of the Cradle to Cradle Certified® Products Program, a global standard for the design of safe, healthy products. He is a business strategist for leading global companies, an advisor to government and international bodies as well as not-for-profits. He was the inaugural Chair of the World Economic Forum’s Meta-Council on the Circular Economy (2014-2016), and currently serves on the Forum’s Global Future Council on Biodiversity and the Bio-economy.

In recognition of his visionary work, McDonough received the Presidential Award for Sustainable Development (1996), for exemplary leadership and public service; the U.S. EPA Presidential Green Chemistry Challenge Award (2003), for groundbreaking innovations in product development; and the Smithsonian’s National Design Award (2004), for outstanding achievement in environmental design. Recently, he was awarded the Fortune Award for Circular Economy Leadership during the 2017 World Economic Forum Annual Meeting in Davos, where he was introduced as “the father of the circular economy.”

EDUCATION

Yale University, School of Architecture, Master of Architecture, 1976

Dartmouth College, Bachelor of Arts, Magna cum Laude, Phi Beta Kappa, 1973

SELECTED HONORS AND AWARDS

World's 50 Greatest Leaders, *Fortune* Magazine, 2019

Award for Circular Economy Leadership, World Economic Forum, 2017

US Green Building Council Leadership Award, 2016

J.N. Darling Conservation Award, National Wildlife Federation, 2014

Rachel Carson Environmental Award, Natural Products Award, 2013

21st Century Visionary Science Leadership Award, U.S. EPA, 2008

Presidential Green Chemistry Award (for work with Shaw Industries/Berkshire Hathaway) President George W. Bush, 2004

Benjamin Botwinick Prize for Ethical Practice in the Professions, Columbia University Business School, 2003

Hero for the Planet, *Time* Magazine, 1999

United States Presidential Award for Sustainable Development, President Clinton, 1996

National Design Award, The Smithsonian Institution, Cooper-Hewitt Museum, 2004

Hero for the Planet,
Time Magazine, 1999





World Economic Forum,
Award for Circular Economy
Leadership, 2017

ASSOCIATIONS

American Institute of Architects, Fellow; Founding Member, Committee on the Environment

American Society of Landscape Architects, Honorary Member

Royal Institute of British Architects, International Fellow

Urban Land Institute, Fellow

U.S. Green Building Council, Charter Member

ACADEMIC

University of Virginia

Dean, School of Architecture and Edward E. Elson Endowed Chair, 1994–1999

Professor of Business Administration & Alumni Research Professor, Darden School of Business, 1999–present

King Abdullah University of Science and Technology (KAUST)

Distinguished Research Professor, 2020–present

Stanford University

Consulting Professor, Civil and Environmental Engineering, 2004–present

Living Archive Subject, Stanford University Libraries, 2012–present

University of Cambridge

Founding member, Sustainability Leadership Council, 2007–present

Yale University

School of Forestry & Environmental Studies Leadership Council, 2002–present

Arizona State University

International Board of Trustees for Sustainability, 2007–present

Instituto de Empresa, Madrid, Spain

Chair, Eco-Intelligent Management Center, 2004–2006

Cornell University

A.D. White Professor-at-Large, 1999–2004

Tongji University, Shanghai

Honorary Professor, 2004

CORPORATE LEADERSHIP

Unilever Sustainable Living Plan

Advisory Council, 2018–2021

Walmart

External Advisory Council, 2009–2013

SAP CEO Sustainability Advisory Panel

Member, 2011–2012

General Electric

Ecomagination, Board of Advisors, 2008–2009

Dow Jones Sustainability Index

Advisory Board, 2004–2014

VantagePoint Capital Partners

Senior Advisor, 2004–2014

Cherokee Sustainability Advisory Council

Member, 2004–2014

NON-PROFIT LEADERSHIP

Fashion For Good

Co-Founder, 2017

Clinton Global Initiative

Advisor, 2013–2016

Cherokee-McDonough Challenge

Advisor, 2012–present

Cradle to Cradle Products Innovation Institute

Co-Founder, 2009

Healthy Child Healthy World

Advisory Board, 2006–2011

Sustainable Packaging Coalition

Co-Founder, 2005

GreenBlue

Co-Founder, 2002

H. John Heinz III Center for Science, Economics, and the Environment

Board of Trustees, 2001–2004

President's Council on Sustainable Development

Special Advisor to President Clinton, 1993–1996

W. Alton Jones Foundation

Board of Trustees, 1992–1996



World Economic Forum
Chair, Meta-Council on the Circular Economy, 2016



China-U.S. Center for Sustainable Development
Chair and Member of the Board of Councilors, 1999–2009

INTERNATIONAL LEADERSHIP

World Economic Forum

- Commissioner, The Global Commission on BiodiverCities, 2021–present
- Member, Global Advisory Board of Scale360°, 2020–present
- Member, Global Future Council on Biodiversity and the Bio-economy, 2018–present
- Member, Global Future Council on the Future of Environment and Natural Resource Security, 2016–2017
- Chair, Meta-Council on the Circular Economy, 2014–2016
- Member, Global Agenda Council on Design, 2010
- Chair, Global Agenda Council, Future of Sustainable Construction, 2008–2009
- Cultural Leader 2002–2008

United Nations

- Sustainable Development Goals**
Presenter and Panel Participant, 2014
- The Earth Summit: Conference on the Environment & Development**
Official Representative for Architecture and City Planning, International Union of Architects and the American Institute of Architects (dual role), Rio de Janeiro, 1992
- Official Representative, New York, 1992

China-U.S. Center for Sustainable Development

- U.S. Chair Emeritus of the Board of Councilors, 2009–present
- U.S. Chair and Member of the Board of Councilors, 1999–2009

China Association of
Circular Economy, 2016



THE WALL STREET JOURNAL.

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Will Poland Plant A Forest to Satisfy A U.S. Architect?

• • •
Air-Loving Mr. McDonough
Plans Warsaw Skyscraper
Of Lasting Aerobic Value

By RUSK CUTLER

Staff Reporter of THE WALL STREET JOURNAL
NEW YORK—Sitting at the bar of the Four Seasons restaurant, architect William McDonough seems oblivious to the glamorous clientele and the elegant setting. He is ogling the curtains rippling above the ventilation ducts. "Look how much air is moving around!" he says. "The ventilation here is great!"

You may be hearing more about the 35-year-old Mr. McDonough and his preoccupation with clean air. After years of relative obscurity, he is starting to attract notice for the ecological as well as the aesthetic quality of his architecture.

Mr. McDonough believes that the well-being of the planet depends on such strategies as opening windows to cut indoor air pollution, tacking down carpets instead of using toxic glues, and avoiding mahogany, which comes from endangered rain forests.

Aerobic Architecture?

He has put some of his aesthetic ideas into practice with his design of the four-star Quilted Giraffe restaurant—"architecturally impeccable," *Progressive Architecture* magazine called it—and his remodeling of Paul Stuart, the Madison Avenue clothing store. He has designed furniture and homes as well as commercial and office space. He is now designing a Broadway stage set for a show by the band Kid Creole and the Mink Company.

What really stirs his muse, though, is aerobic architecture. Now the question is: Is Poland ready for it? Mr. McDonough is about to tackle his biggest clean-air challenge yet, the proposed Warsaw Trade Center in Poland, the first such center in Eastern Europe.

The project has already acquired a certain New York cachet. Bloomingdale's



William McDonough

Will Poland Plant Forest to Suit Architect Who Loves Clean Air?

Continued From First Page

plans to sell a foot-tall chocolate model of the center during the holidays. Some of the sales proceeds will go to the Design Industries Foundation for AIDS. A cake topped with a replica of the center will be auctioned at an AIDS benefit at Sotheby's in December.

If Mr. McDonough's plans get executed, as much of the Polish center as possible will be made from aluminum, steel and glass recycled from Warsaw's abundant rubble. A 20-story mesh spire will stand atop 50 stories of commercial space. Solar-powered batteries will make the spire glow. The windows will open. The carpets won't be glued down, and walls will be coated with nontoxic finishes.

To the extent that the \$150 million budget will allow it, Mr. McDonough will rely on solid wood, rather than plywood or particle board, to limit the emission of formaldehyde.

If Mr. McDonough has his way, the Poles will compensate for the trade center's emissions of carbon dioxide, a prime suspect in the global atmospheric warming many scientists fear. The Poles would plant a 10-square-mile forest somewhere in the country at a cost of \$150,000, with the center's developer footing the bill.

The news hasn't exactly moved others in Mr. McDonough's profession to become architectural Johnny Appleseeds. All architects want to be aware of the ecological consequences of their work, says John Burgee, whose New York firm is designing the redevelopment of Times Square. "But we can't all carry it to that extreme," Karen Nichols, senior associate at Michael Graves's architecture firm in Princeton, N.J., says. "We're really at the mercy of what the construction industry can and will do readily."

Mr. McDonough responds: "I'm asking people to broaden their agendas."

The son of a Seagram's executive who was stationed in many countries around the world, Mr. McDonough was born in Tokyo and attended 19 schools in places ranging from Hong Kong to Shaker Heights, Ohio, before entering Dartmouth College. He earned a master's degree in architecture from Yale.

His interest in the natural environment dates from his youth. He and his father still spend time each summer fly-fishing for salmon in Iceland. Living in Hong Kong, he says, made him sensitive to the limits on food, power and water supplies. At his first school in the U.S., he was thought a little strange for shutting off open water taps and admonishing his schoolmates to take only brief showers.

He and a Dartmouth roommate established a company that restored three hydroelectric power plants in Vermont. At Yale, he designed one of the first solar-heated houses to be built in Ireland.

Beeswaxed Floors

Mr. McDonough's first professional project fully to reflect his environmental ardor was his 1986 design for the headquarters of the Environmental Defense Fund in New York. The offices took 10,000 square feet of a building with 14-foot ceilings and big, operable windows.

Since the 1970s energy crisis, some efforts to conserve energy by sealing buildings have had an unintended side effect: high indoor pollution. To reduce it at the fund's building, workers rubbed beeswax instead of polyurethane on the floors in the executive director's office. Jute, rather than a synthetic material, lies under the tacked-down carpets, and the desks are of wood and granite instead of plastic.

The budget was only \$400,000. "Athens with Spartan means," Mr. McDonough says. The fund's lawyers work in an Athenian grove of potted trees. Economists and administrators sit along a "boulevard" with street lamps and ficus trees. In offices, triphosphorous bulbs simulate daylight. Offices with outside windows have inside windows, too, to let in more real daylight.

"We proved a healthy office doesn't cost more," says Frederic Krupp, executive director of the fund.

It "really looks beautiful and is very light," says Ann Hornaday, a free-lance writer who has visited the office for lunch meetings. But, she says, "I guess I didn't really notice the trees. Maybe they were hidden by all the people."

Warsaw's Eiffel Tower

Neither the Quilted Giraffe nor the Paul Stuart renovation reflects much of Mr. McDonough's environmental concern. The restaurant was conceived as a sparkling, crystalline "grove." It makes extensive use of stainless steel, silver and aluminum that sets off black granite table tops and a gray terrazzo with zinc-strip floors. To more than replace the wood from two English oaks used for paneling at Paul Stuart, however, Mr. McDonough and friends planted 1,000 acorns around the country.

The ambitious Warsaw project still awaits approval by city officials. Its developer is a Polish American, Sasha Muniak. He had worked with Mr. McDonough on an earlier project and recruited him as architect for the trade center. The center will provide space for computer hardware and facsimile and other telecommunications equipment, not readily accessible in Poland now, for a growing number of Westerners doing business in Eastern Europe.

Mr. McDonough thinks of the center as the "Eiffel Tower of Warsaw" and "a symbol of the resurgence of Poland." If any nation can use environmentally benign architecture, it is Poland, Jessica Mathews, vice president of World Resources Institute in Washington, D.C., says that perhaps a quarter of Poland's soil is too contaminated for safe farming because of air pollution. The pollution is also killing forests and destroying buildings that date back to the Middle Ages.

The future of the forest remains uncertain. Mr. Muniak's company, Itatag Ltd., has agreed to set aside the money to plant and maintain it, but discussions are still going on over where to place it and how to ensure that it will be maintained. After all, Mr. Muniak says, "in Poland there aren't too many people worried about the environment. They're more worried about bread on the table."



< WARSAW TRADE CENTER CONCEPT DESIGN, 1989
PROPOSAL FOR A CLIMATE POSITIVE BUILDING
Front page of *The Wall Street Journal* | October 23, 1989

WILLIAM McDONOUGH + PARTNERS

Architecture + Community Design

William McDonough + Partners executes a diverse international array of projects from our studio in Charlottesville, Virginia. Our buildings and communities are inspired by Cradle to Cradle Design™ and embody enduring standards of design quality and economic, ecological and social responsibility. We practice a positive, principled approach to design that draws inspiration from living systems and processes. At its heart, this unique approach celebrates the abundance of nature.

Founded by William McDonough in New York in 1981, the practice was relocated to Charlottesville, Virginia in 1994, when McDonough became Dean of the School of Architecture at the University of Virginia. The firm’s partners collaborate closely with McDonough to bring his design concepts into reality.

Among the practice’s diverse achievements are several recognized landmarks of the sustainability movement:



Herman Miller
Greenhouse

Factory and offices in
Holland, Michigan



YouTube
Headquarters

Originally designed for
Gap, Inc. in San Bruno,
California



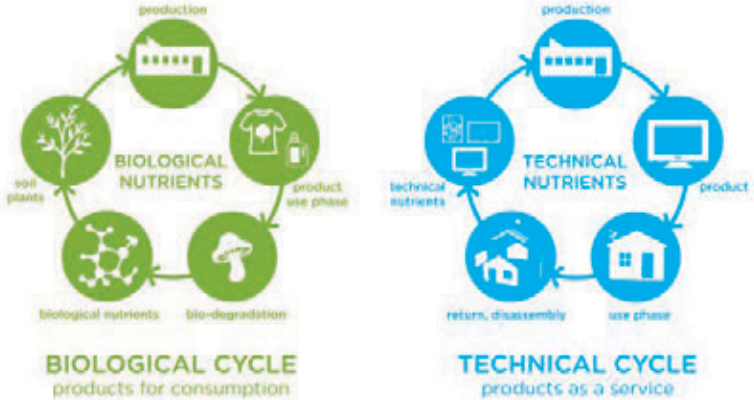
Oberlin
College

Net-positive energy for
the Adam Joseph Lewis
Center for Environmental
Studies



Ford Motor
Company

River Rouge office and
manufacturing facility
in Dearborn, Michigan



CRADLE TO CRADLE DESIGN™ PRINCIPLES

In their 2002 book, *Cradle to Cradle: Remaking the Way We Make Things*, architect William McDonough and chemist Dr. Michael Braungart presented an integration of design and science that provides enduring benefits for society from safe materials, water and energy in circular economies and eliminates the concept of waste. The book put forward a design framework characterized by three principles derived from nature which inform our designs at all scales:

EVERYTHING IS A RESOURCE FOR SOMETHING ELSE. In nature, the “waste” of one system is food for another. Buildings can be designed to be disassembled and safely returned to the soil (**biological nutrients**), or re-utilized as high-quality materials for new products and buildings (**technical nutrients**). Conventional building systems and infrastructure (for example, wastewater treatment) can be redesigned to become nutrient management systems that capture previously discarded resources for safe and productive reuse.

USE CLEAN AND RENEWABLE ENERGY. Living things thrive on the energy of current solar income. Similarly, human constructs can utilize clean and renewable energy in many forms—such as wind, geothermal, gravitational energy—thereby capitalizing on these abundant resources while supporting human and environmental health.

CELEBRATE DIVERSITY. Around the world, geology, hydrology, photosynthesis and nutrient cycling, adapted to locale, yield an astonishing diversity of natural and cultural life. Designs that respond to the unique challenges and opportunities offered by each place fit elegantly and effectively into their own niches.

Rather than seeking to minimize the harm we inflict, *Cradle to Cradle* reframes design as a positive, regenerative force—one that creates footprints to delight in, not lament.

diagrams ©1995-2022 MBDC, LLC.



William McDonough + Partners has played a **prime role in defining sustainable design** for more than two decades.

CRADLE TO CRADLE DESIGN™ APPROACH

To achieve our vision of making the world better now and for future generations, we need a different approach to design. While each project will respond to its unique culture, site, budget and schedule, our principled approach remains constant.

DESIGN FOR MORE GOOD

Our ambition is to design for 'more good' by being positive and inspirational (e.g. use renewable energy) rather than only minimizing damage (e.g. produce less carbon).

DESIGN FOR THE CIRCULAR ECONOMY

Interpret the client's vision and create a design concept through the lens of Cradle to Cradle® thinking.

ANTICIPATE THE FUTURE

We design for resiliency and for next use through adaptive flexible spaces as needs change and evolve.

CREATE A FRAMEWORK FOR INNOVATION DESIGN FOR CONTINUOUS IMPROVEMENT

Encourage improved processes, technologies and infrastructures; support experimentation and the exchange of knowledge.

< YOUTUBE HEADQUARTERS (current)
GAP CORPORATE CAMPUS (former)
San Bruno, California | Completed 1997

OBERLIN COLLEGE

Net-Positive Energy

Oberlin, Ohio
Conceived 1994, Completed 2001

Client Oberlin College

Area 13,600 square feet

Program Classrooms, offices, atrium and auditorium

Awards

Verified Zero Energy, New Buildings Institute

AIA Committee on the Environment Top Ten Green Buildings, 2002

Build America Award, 2001

Green Building Challenge Award Winner, 2000

Build Ohio Award, 2000

AIA Committee on Architecture for Education, Honor Award 1999

The Chicago Athenaeum American Architecture Award, 1999

U.S. Department of Energy, One of 30 Milestone Buildings of the 20th Century

Team

William McDonough + Partners, Design Architect; AIA, Executive Architect; PAYC, Construction Manager; Acustec, Acoustic Design; ADRAR, Plumbing; AGR, Codes; Aqualab, Laboratory; ElG, C2C products; Gaia, Landscape; GBCG, HVAC/Electrical; MTS, Lighting; PyP Proyectos, Structural; SES, Energy Model; SETRI, LEED

The Center was the first commercial building to be Zero Energy Verified by the New Buildings Institute.

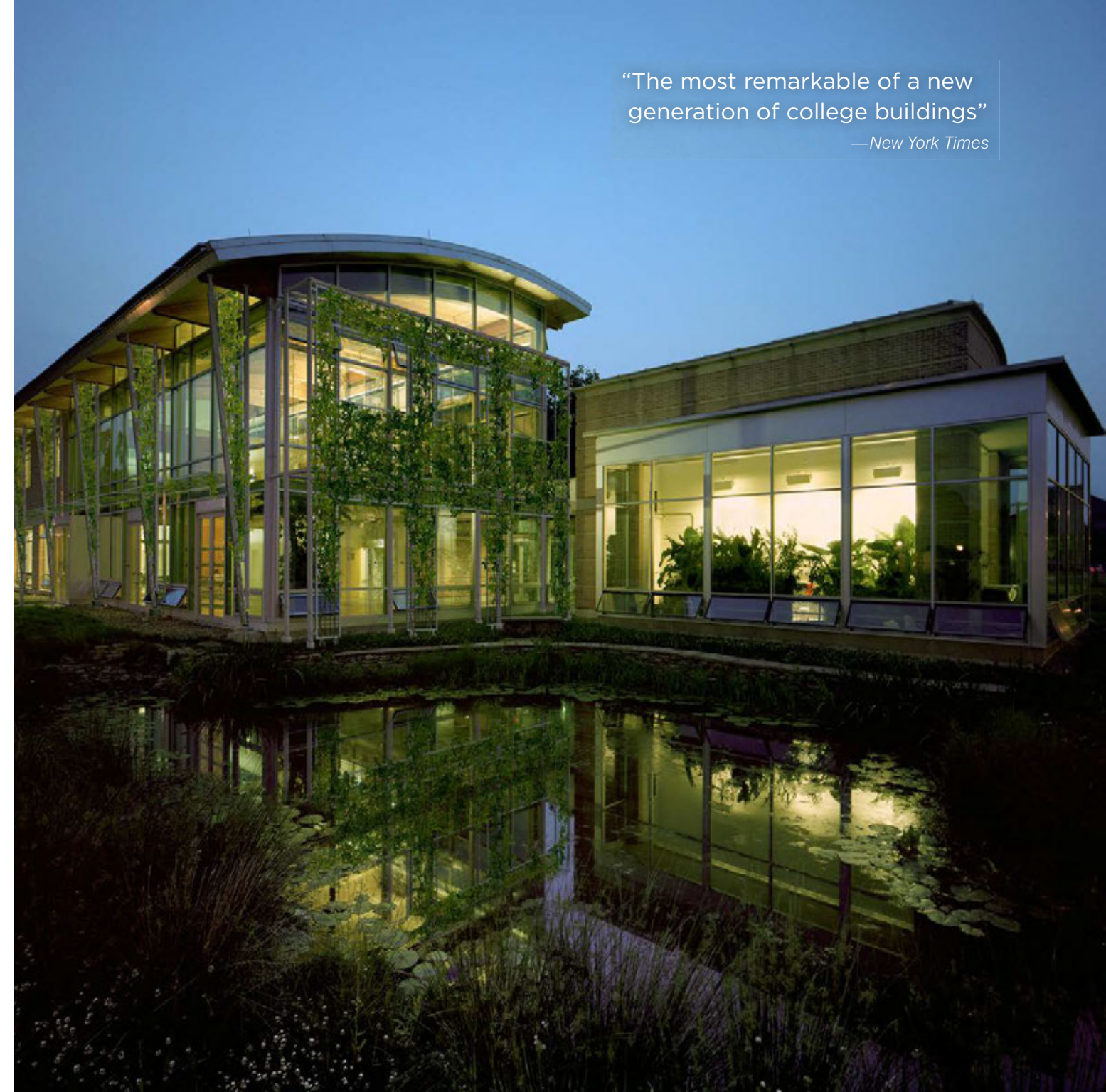
Described by the New York Times as “the most remarkable of a new generation of college buildings,” the Adam Joseph Lewis Center for Environmental Studies at Oberlin College operates on three fundamental principles of nature: eliminate the concept of waste, rely on natural energy flows and respect diversity.

The building features a 45 kw roof-mounted photovoltaic array installed during the original construction, as well as a 100 kw array installed over the parking lot in 2006. This addition led to the site becoming a net energy exporter, producing 30 percent more energy than it needs to operate and sharing this excess energy with the community. An integration of natural energy flows and the building’s energy needs, its use as a teaching and public space, and the desire to blur the distinction between indoors and out inspires the Center’s disposition.

In 2006, the site became a net energy exporter, producing 30 percent more energy than it needs to operate and sharing this excess energy with the community.

“The most remarkable of a new generation of college buildings”

—New York Times



PARK 20|20

First Circular Economy Development
Inspired by Cradle to Cradle Design

Hoofddorp, The Netherlands
Conceived 2007, Ongoing
9 Completed Buildings

William McDonough + Partners is the lead architect and master planner for Park 20|20, the first full-service Cradle to Cradle Design™-inspired working environment in The Netherlands.

Located within a man-made cultural landscape of a Dutch polder (land reclaimed from the sea), the firm was engaged by Delta Development Group in 2007 to create a new model of sustainable development that implements the Cradle to Cradle philosophy holistically and at all scales—from the city down to the molecule.

Client Delta Development Group
Area 114,000 sq. meters (Phase 1: 24,500 sm)

Awards
2010 American Society of Landscape Architects Honor Award
2012 SHARE (Sustainable Haarlemmermeer Real Estate) Award

Team
William McDonough + Partners, Master Planning; Nelson Byrd Woltz, Landscape Architect



- | | | | | | | | | | |
|--------------------------------|--|----------------------------------|----------------------------------|--|--|--------------------------------------|---|---|--|
| A NOW
Completed 2017 | B Fox Vakanties
Completed 2012 | C SHARE
Completed 2020 | D Tower
In Development | E Bosch Siemens
Inspiration House
Completed 2012 | F FIFPro
Headquarters
Completed 2013 | G Bluewater
Completed 2014 | H Biological
Nutrient Pavilion
Completed 2012 | I Plantronics
Headquarters
Completed 2016 | J Technical
Nutrient Pavilion
Completed 2012 |
|--------------------------------|--|----------------------------------|----------------------------------|--|--|--------------------------------------|---|---|--|



“We have looked at the best architects all over the world for the most innovative development in The Netherlands—a place known for sustainable thinking, business performance and economics—and there is no one better than William McDonough + Partners. Our clients, like Bosch Siemens, agree. This is the best architect imaginable for their business.”

– Dr. Coert Zachariasse, CEO, Delta Development Group

WHAT MAKES PARK 20|20 DIFFERENT?

William McDonough + Partners’ master plan is the paramount example of applying the Cradle to Cradle Design™ Framework and circular economy thinking to a community-scale development.

The plan is based on a few key principles that set it apart from a typical office park:

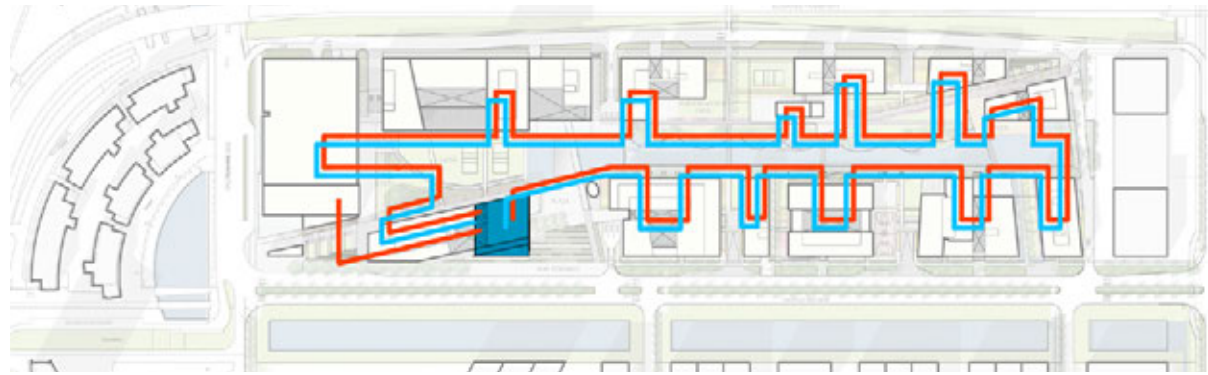
The buildings are constructed as “material banks” and are designed for disassembly or reconfiguration if market demand changes.

Financial leases with material suppliers lower upfront construction costs, which allow those suppliers to retain ownership of materials used in construction.

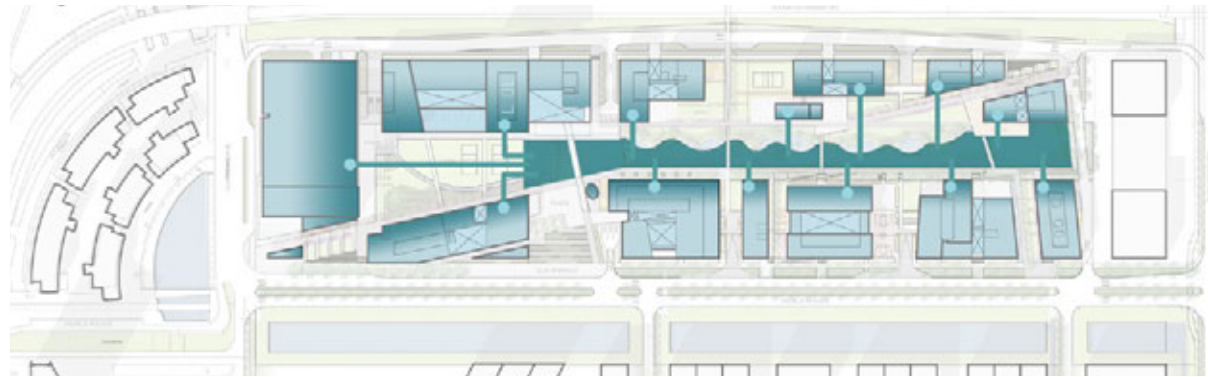
The buildings are designed with flexibility in mind, anticipating the needs of future tenants. Connections between floors can easily be changed and staircases repositioned, avoiding energy-intensive demolition processes to alter buildings’ purposes.

Park 20|20 is the largest installation of Cradle to Cradle Certified® materials worldwide. An integrated supply chain has resulted in reduced construction costs of 19% while improving quality at the same time, according to Cradle to Cradle® and BREEAM-NL Standards. By focusing on procuring the highest quality that budgets allow, rather than the cheapest price for meeting the technical specifications, Park 20|20 embodies innovation.

Structures are designed as integrated systems. While each building is unique, they are all designed to be supportive of William McDonough’s concept of “a building like a tree.” They generate energy, sequester water and through a central “nervous system” running through the entire community, the buildings “feed and nourish” each other as needed.



Waste, Heat and Power



Stormwater and Waste Water



Photosynthetic Surfaces

PARK 20|20

Integrated Systems

William McDonough + Partners' award-winning master plan creates a community of shared systems that serve as one big, live organism. While each building is unique, they are all designed to be supportive of William McDonough's concept of "a building like a tree." They generate energy, sequester water and through a central "nervous system" running through the entire community, the buildings "feed and nourish" each other as needed.

Waste, Heat and Power

Office wastewater and restaurant green wastes are treated in a solar aquatic waste-treatment system within a centralized facility on site. Biogas from the wastewater treatment powers the turbines for electricity. Heat generated in the process produces hot water for the hotel.

Stormwater and Wastewater

Wastewater is collected through a district loop for on-site treatment in the central facility. After purification, greywater is reused for toilet flushing. Green roofs absorb rainfall. Runoff and overflow are directed to on-site storage.

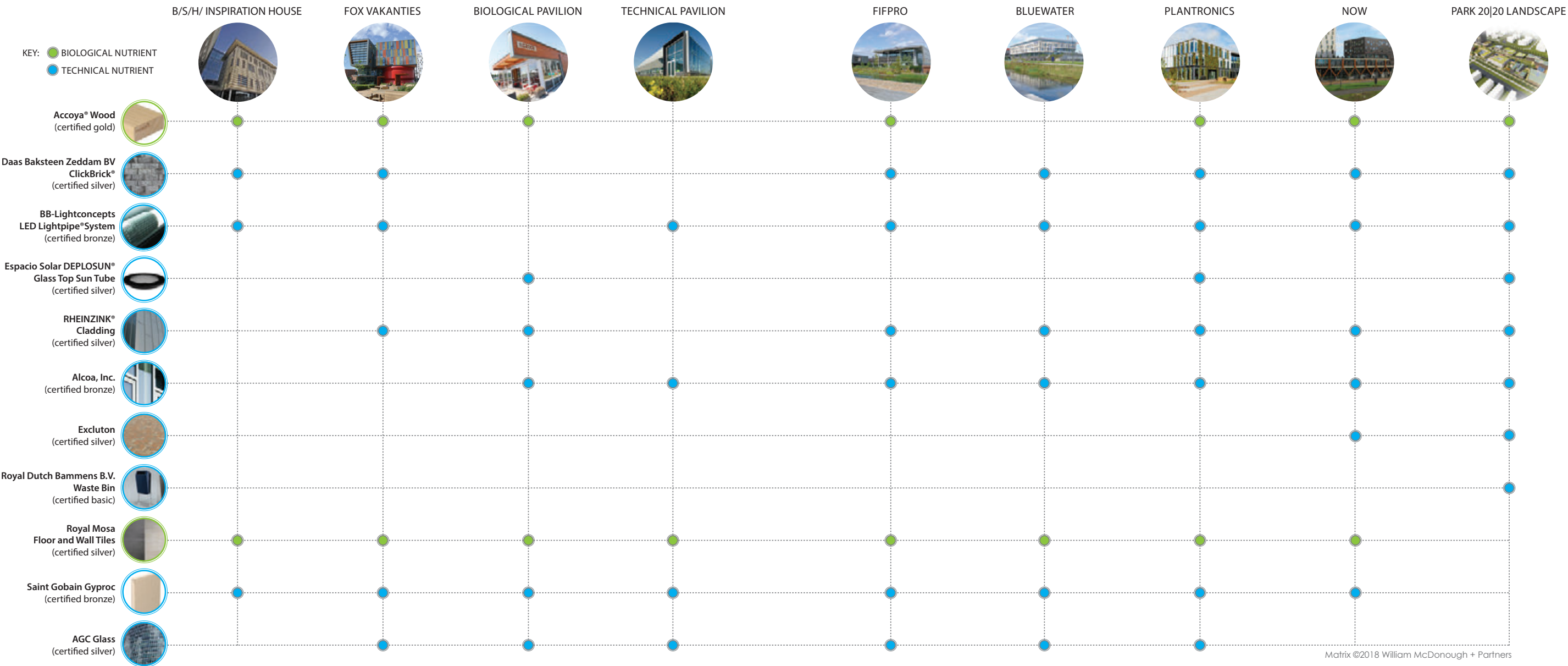
Photosynthetic Surfaces

Building roofs include photovoltaic (PV) arrays and green roofs—sustainable strategies that are also synergistic. With a cooler surface temperature, green roofs boost the efficiency of PVs while PVs provide shade to the landscape for increased biodiversity.



PARK 20|20

Cradle to Cradle Certified® Products



Matrix ©2018 William McDonough + Partners

B/S/H (BOSCH SIEMENS)

Inspiration House at Park 20|20

Hoofddorp, The Netherlands
Completed 2011

Client Bosch Siemens Hausgeräte, a high-end appliance manufacturer

Area 8,348 gross square meters

Program A Netherlands headquarters and showroom; includes offices, café

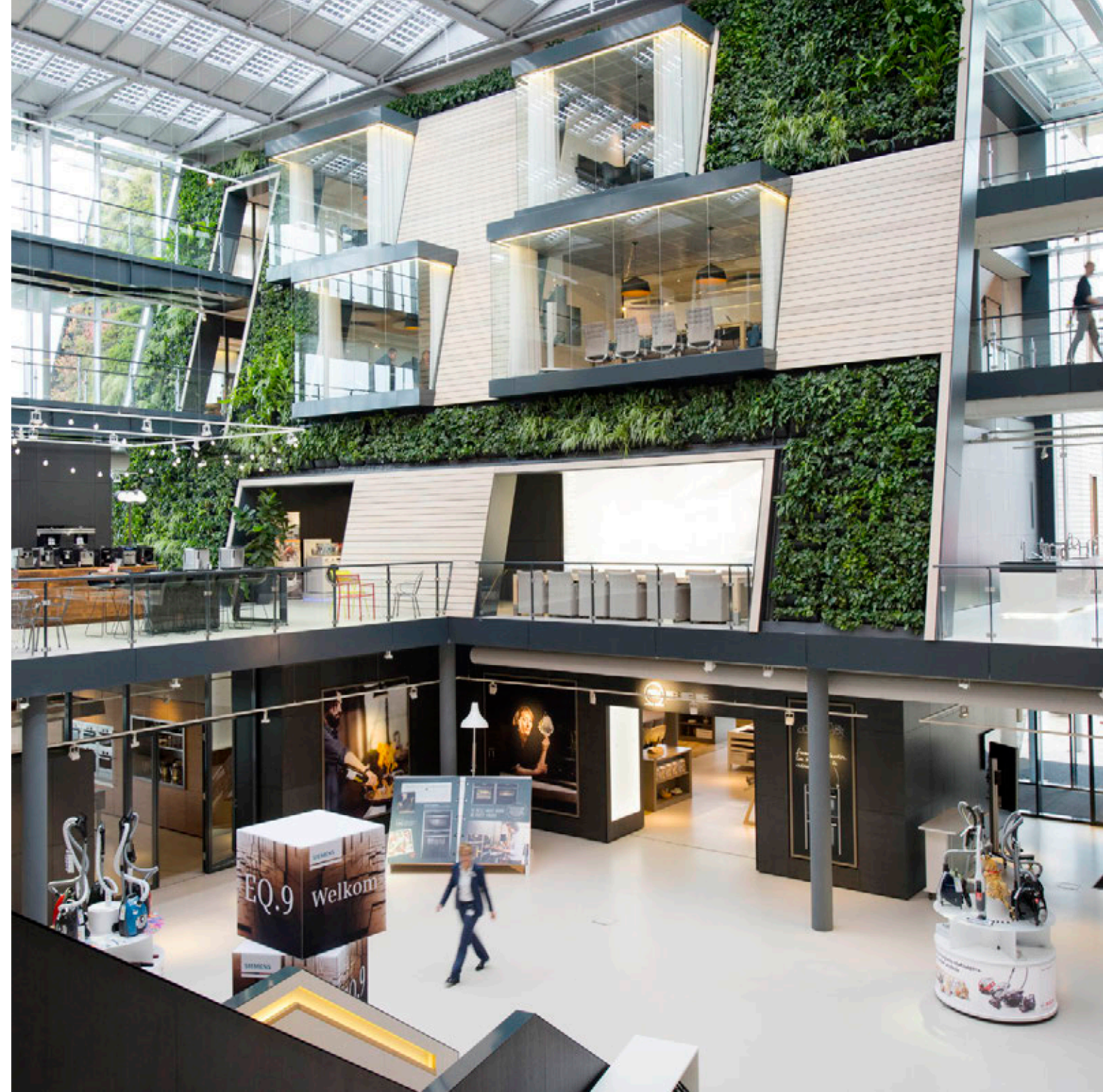
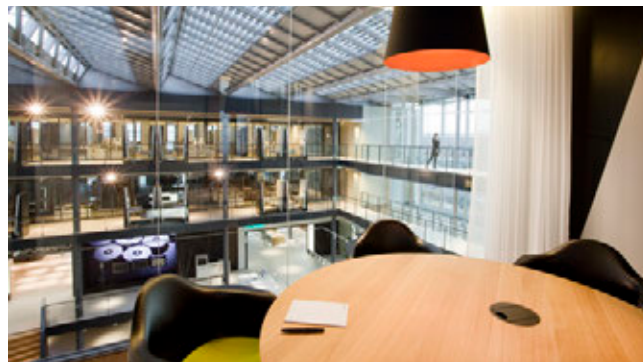
Awards
BREEAM Good

Shaw Contract Design Is...Award 2012

Team
William McDonough + Partners, Design Architect;
KOW, Architect of Record; D/Dock Amsterdam,
Interior Designer; Nelson Byrd Woltz, Landscape
Architect; Techniplan Adviseurs BV, Civil and
MEP Engineers; DGMR, Fire Engineer/BREEAM
Consultant; Van Der Vorm Engineering, Structural
Engineer; IBB Kondor, Contractor

Bosch Siemens Hausgeräte (B/S/H/) is home to five of the top brands in household appliances – Bosch, Siemens, Gaggenau, Neff and Solitaire – in the first building completed at Park 20|20.

Designed by William McDonough + Partners as a flexible, innovative workplace, B/S/H/ includes a full-height atria with a Living Green Wall and Building Integrated Photovoltaic (BIPV) roof that maximizes energy and daylighting to showrooms that can be converted to offices as needed. Interior spaces are designed to encourage occupant well-being through individual user controls, fresh air and sunlight, and materials assessments to ensure that safe and healthy products are used throughout the construction and use of the building.



FOX VAKANTIES

Office Building at Park 20|20

Hoofddorp, The Netherlands
Completed 2012

Client Fox Vakanties, a Dutch eco-tourism agency

Area 3,678 square meters

Program Offices, café and interactive theater

Awards

BREEAM Excellent

Team

William McDonough + Partners, Design Architect;
KOW, Architect of Record; Jos Bogaarts, Interior
Architect

With a high design ambition, the office headquarters for Fox Vakanties occupies a prominent site at the entrance to Park 20|20 and embodies and colorfully celebrates both global and local diversity and cultures.

William McDonough + Partners' exuberant design is anchored by the company's "Travel Theater" with its undulating and sculptural folded fabric skin that becomes a glowing beacon at night.

The Fox Vakanties building dynamically responds to its site with a self-shading south mass and an open glass north facade with views toward the park. Interiors are designed to connect occupants to both each other and the world through equitably and sustainably sourced materials that are optimized for human and ecological health.



FIFPRO

World Headquarters at Park 20|20

Hoofddorp, The Netherlands
Completed 2013

Client Delta Development Group / FifPro

Area 2,358 square meters

Program Offices, roof garden and event space, auditorium

Awards

BREEAM Excellent

Team

William McDonough + Partners, Design Architect;
KOW, Architect of Record; Merkx + Girod, Interior Architect; Copijn, Landscape Architect; Van der Vorm Engineering, Structural Engineer; Installatie Advies Groep, MEP Engineers; DGMR, BREEAM Consultant; IBB Kondor, Contractor

As the worldwide representative union for all professional soccer players, FIFPro's global reach and the cultural diversity of its members have inspired a dynamic design from William McDonough + Partners.

Enveloped by a solar shade canopy, a monumental glass entry volume visually connects and activates interior public spaces on multiple floors while creating direct relationships with exterior gardens and park amenities. Abundant daylight penetrates deep into open, efficient and flexible floor plates with interiors that showcase the colors and materials of the world. Embodying the organization's mission to promote fair play, equality and solidarity among its international family of athletes, FIFPro's new home is a connective instrument of openness, transparency and responsive design, celebrating connectivity between global and local communities.



UNIVERSIDAD EAN

Cradle to Cradle Design™-Inspired Building

Bogotá, Colombia
Completed 2020

Client Universidad EAN

Area 20,000 square meters

Program laboratories, classrooms, administrative offices, seminar rooms, a cafeteria, indoor basketball court, exercise gymnasium, and an auditorium seating 500 people

Team

William McDonough + Partners, Design Architect; AIA, Executive Architect; PAYC, Construction Manager; Acustec, Acoustic Design; ADRAR, Plumbing; AGR, Codes; Aqualab, Laboratory; EIG, C2C products; Gaia, Landscape; GBCG, HVAC/Electrical; MTS, Lighting; PyP Proyectos, Structural; SES, Energy Model; SETRI, LEED



Aptly referred to as “Project Legacy,” the 20,000 square meter building for Universidad EAN (EAN) illustrates the possibilities of design for the circular economy, with a focus on the Latin American construction sector, and starting with Colombia.

Instruction in the building will center on Cradle to Cradle Design™ principles, but Project Legacy has already become a “living lab” for sustainability and has proven, in conjunction with the University, the City of Bogotá, and local construction and building materials industries, that green building projects can support circular ecosystems.

“As an architect, I have often wondered how buildings can align with Arthur C. Clark’s statement: ‘any sufficiently advanced technology is indistinguishable from magic.’ To me, the EAN building is magical,” said William McDonough. “We designed this school to be like a living, breathing organism, native to and a part of its environment. The design elements that make up the building mirror the ambitions of the small and medium-sized entrepreneurs learning how to design and execute business plans guided by Cradle to Cradle and the Circular Economy.”



APEX CLEAN ENERGY HEADQUARTERS

Net-Positive Energy, Mass Timber Building

Charlottesville, Virginia
In Construction

Client Apex Clean Energy, Riverbend Development, Hourigan

Area 187,000 square feet

Program Multi-tenant office space

Team

William McDonough + Partners, Design Architects; Staengl Engineers, MEP Engineers; Simpson Gumpertz & Heger, Structural Engineers + Facade & Waterproofing Consultant; Collins Engineering, Civil Engineers; ARUP, Mass Timber Fire Engineering Consultant, Hourigan, General Contractor

Starting from WM+P's original aspiration of designing buildings like trees, Apex Clean Energy's headquarters is built with a Mass Timber wood structure and healthy materials while harvesting daylight and energy from the sun. A total of 875 roof- and canopy-mounted solar panels is expected to produce 364 MWh of energy per year, enough to equate to net-positive energy use by the Apex offices.

Implementing MT products brings natural beauty to occupants while allowing for transparency in material sourcing, material health, material reutilization and carbon management. By assembling the building using only mechanical fasteners, the high-value MT elements can be harvested from the structure and reused so that the material can return to industry for next use as part of the circular economy.

The building also prioritizes occupant well-being, offering excellent views to natural light, lighting controls and operable shades, and Cradle to Cradle Certified® products were incorporated where possible. Meanwhile, the structure's green roof creates habitat to promote biodiversity and stormwater retention.



NASA SUSTAINABILITY BASE

NASA'S First Space Station on Earth

NASA Ames Research Center
Mountain View, California
Completed 2012

Client NASA Ames Research Center

Area 50,000 square feet

Program Open and closed office spaces,
conference area, library and meeting space

Selected Awards

Architectural Record, 2014 Good Design is Good
Business Award

Acterra, 2013 Business Environmental Award

White House GreenGov Award 2011, Lean Clean
and Green

ENR California, Best Projects of 2011, Award of
Merit—Green Building

GSA Real Property 2010 Award for Green
Innovation

Team

William McDonough + Partners, Design Architect;
AECOM, Architect of Record, MEP/Structural/
Civil; Loisos + Ubbelohde, Daylighting/ Lighting /
Energy Consultant; Siteworks Studio, Landscape
Architect; MBDC, Materials Assessment

NASA engaged William McDonough +
Partners to design Sustainability Base,
its first new construction in 20+ years.
The NASA team wanted to show how a
federal facility, with a tight schedule and a
conventional budget, could be a model of
effectiveness and sustainability.

Sustainability Base is named in recognition of the kinship
between it and the first off-planet human outpost on the
moon, Tranquility Base. The facility has earned LEED®
Platinum certification, among the first federal installations
to do so. NASA is applying its expertise derived
from aeronautics, information technology and space
exploration to the built environment, using Sustainability
Base as a living laboratory to develop methods and tools
for understanding and controlling dynamic energy and
water systems here on Earth.

“Working closely with Bill McDonough
and his team was inspirational and
extremely beneficial. The collaborative
process yielded a highly sustainable
and beautiful design—optimized
for building performance and
representative of our values.”

— Steven F. Zornetzer, Ph.D., NASA Ames Research
Center, Associate Center Director



NASA SUSTAINABILITY BASE

High Performance Systems

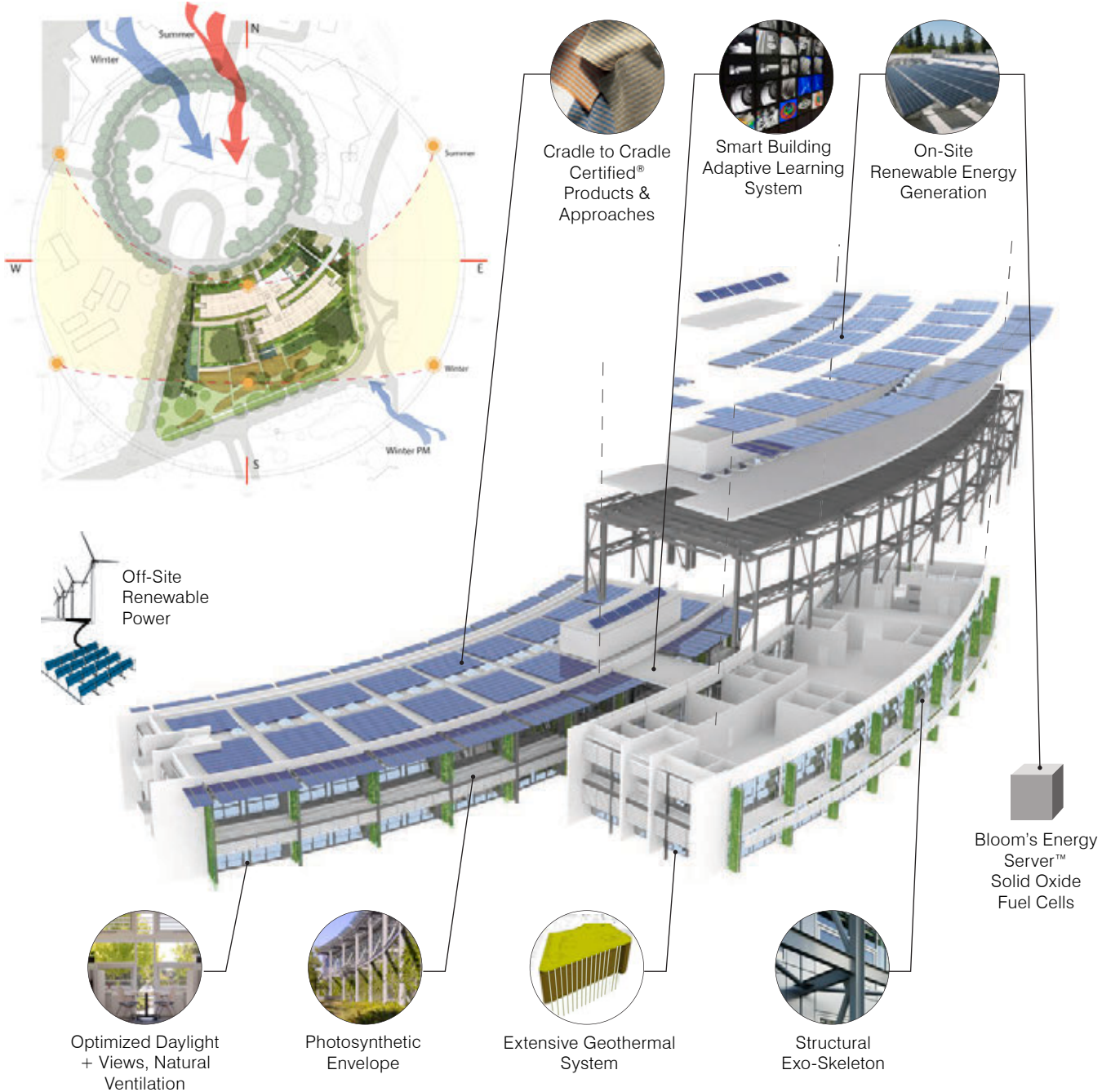
Sustainability Base benefits from integrated state-of-the-shelf, high-performance systems coupled with NASA's unparalleled expertise in experimentation, monitoring and optimization.

Sustainability Base effectively combines passive (hydronic geothermal) and active (heat exchangers, radiant ceiling tiles) heating/cooling and daylighting strategies to optimize energy use. The facility's two wings are offset to maximize natural ventilation from prevailing wind patterns. Intelligent, automated windows, window shades and efficient lighting modified by individually addressable ballasts, intensity pre-sets and integrated light sensors contribute layers of responsive optimization options.

On-site, a BloomBox® ES-5700 **produces more electricity than peak demand**. Roof-mounted SunPower® E-19 panels can produce 87kW, approximately 30% of annualized demand. Excess production is metered onto the local electrical grid at the Ames substation.

Over 2000 sensor 'points' report data, instantaneously or at intervals; ~1200 generate quantified information. Sustainability Base doubled the active sensor numbers for the entire Ames campus. Facilities managers use this data operationally and intelligent systems researchers access it to advance modeling, prediction, anomaly detection, failure anticipation and on-demand maintenance studies. **This scaled-up test bed is an economic engine for built environment technologies leading to autonomously 'smart' buildings for NASA and its commercial and academic partners.**

Inside, technology developed for the International Space Station recycles sink/shower greywater for toilet flushes. Outside, irrigation uses locally remediated Superfund-site groundwater. Overall, **Sustainability Base saves 90% of potable water over comparably sized facilities.**



NASA SUSTAINABILITY BASE

Materials Selection

A rigorous materials selection protocol was implemented during the design and construction of Sustainability Base. First, Cradle to Cradle Certified® products were used when available, cost effective and achievable through a competitive, tender process. When certified products could not be implemented, alternative products were evaluated by MBDC for their Cradle to Cradle Certified® potential.



Other material strategies included:

Using materials effectively. An external braced frame reduces the amount of steel (by weight) in the building and provides an armature for sunshading.

Preferring materials beneficial to human health, ecological health and designed for technical and/or biological cycles. When these materials were not available due to performance requirements, remaining materials were evaluated for obvious risks to the biosphere.

Incorporating material content considerations included recyclable/recycled materials, salvaged materials, locally available and/or rapidly renewable materials and certified wood. The main components of the design (concrete, steel, glass, aluminum) have high recycled content and are regionally available. The lobby areas reuse oak flooring from a transonic wind tunnel on the NASA Ames Campus.

Designing for disassembly by choosing a steel structure (rather than concrete) that can be easily dismantled as well as repaired after a seismic event. Exterior cladding was provided in pre-fabricated unitized components.

NASA SUSTAINABILITY BASE

Cradle to Cradle Certified® Products



- Centria Dimension Series® panels (certified SILVER)
- Alcoa, Inc. Kawneer 1600 SunShade® louvers (certified SILVER)
- PPG Industries Solarban 70XL™ architectural glass (certified SILVER)
- Alcoa, Inc. Kawneer 1600 Wall System® (certified SILVER)
- Alcoa, Inc. Kawneer InLighten® Light Shelf (certified SILVER)
- Mechosystems, Inc. Mecho®/5 with EcoVeil (certified SILVER)
- Icestone® Durable Surface (certified GOLD)
- Herman Miller Mirra® chair (certified SILVER)

NIKE

European Headquarters

Hilversum, The Netherlands
Completed 1999

Client Nike

Area Phase 1: 375,000 square feet
Phase 2: 125,000 square feet (unbuilt)

Awards

AIA DC Award of Excellence, 2001

Team

William McDonough + Partners, Design Architect;
B & D Architekten, Architect of Record; Nelson
Byrd Woltz, Landscape Architect; John Bergs,
Green Building Consultant

Nike has crafted one of the world's most readily recognizable corporate identities through its emphasis on world-class athletic performance. William McDonough + Partners furthered Nike's mission by bringing world-class innovation to the Nike European Headquarters.

Located within easy access to the train station and the city, the site was once a former harness track and Olympic training ground. The new campus continues the tradition of physical excellence through incorporation of a jogging track that bridges the entry doors, a central pond that becomes an ice rink in the winter and numerous athletic fields and courts. The campus's quartet of office buildings with parking below and the commons building surround a large central public lawn which includes one of the largest rainwater collection systems in Europe.

The flexible, adaptable workplace, designed to convert to housing in the future, includes strong connections to the outdoors through daylighting, natural ventilation, and access to views. Employee health is further optimized through the use of low-VOC finishes in a virtually PVC-free environment. Renewable energy sources provide 30 percent of the total supply, due in large part to one of northern Europe's largest geothermal heating and cooling systems. Designed and built on a rapid schedule, the project offers a model of effective resource management, community connection, long-term flexibility and aesthetic appeal while reflecting its tenants' commitment to corporate social responsibility.



“Bill McDonough is a pioneer and leader in the development of sustainable design and architecture and continues to inspire others with his ideas. Nike looks forward to continuing to share ideas collaboratively as we move toward creating a more sustainable future together.”

– Hannah Jones, Vice President , Sustainable Business and Innovation, Nike Inc.

DROPBOX

Headquarters

San Francisco, California
Completed 2017

Client Kilroy Realty

Area 180,000 square feet

Program Mixed-use commercial offices

Awards

LEED Platinum Certified

Team

William McDonough + Partners, Design Architect;
Loisos + Ubbelohde, Architecture & Energy
Consultant; Rana Creek, Landscape Architect;
WSP, MEP Engineer; Nishkian Menninger,
Structural Engineer; Sandis, Civil Engineer;
Charles M. Salter Associates, Acoustics / AV
/ Telecommunications; Swinerton Builders,
Contractor

William McDonough + Partners designed 333 Brannan, Dropbox headquarters, to be resource effective, to support human and ecological health, and to respect the South of Market historic district character.

Inspired by Cradle to Cradle®, this LEED® Platinum certified building features large, highly flexible, open office floors configured around a central court. The design allows for ample natural light into the office areas and for passive ventilation through closely spaced operable exterior windows. Courtyards at the front entry on Brannan Street and on the Stanford alley are richly landscaped spaces open and available to the neighborhood. The exterior of the building combines brick, high-performance glazing, metal sunshades and exposed concrete that are in visual harmony with the surrounding historically industrial neighborhood.



FERRER TOWER

Research and Development Center

L'hospitalet de Llobregat, Area
Metropolitana de Barcelona, Spain
Design Development

Client Ferrer Grupo

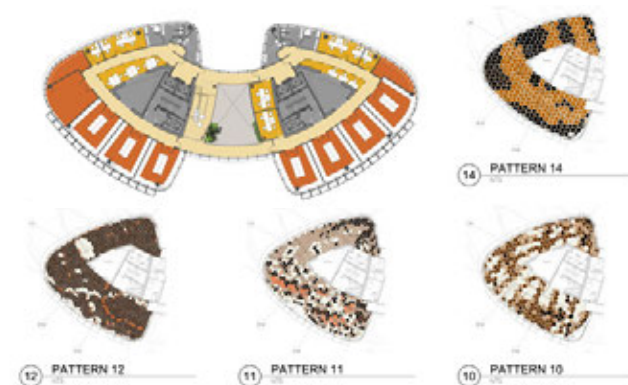
Program Biomedical research laboratories

Area 25,000 square meters

Team William McDonough + Partners, Design
Architect + Interior Designer; IPB S.A., Executive
Architect + MEP Engineer; Eco Intelligent Growth,
Sustainability Consultant; Indus, Structural
Engineers; Siteworks, Landscape Architect

Ferrer's new Research & Development Center is designed to be a landmark for the company, and an attractive draw for scientific research within an expanding health sciences district. Located in the BioPol biotechnology park, the building will serve as a gateway on the Gran Via, a major entrance corridor connecting the Barcelona Airport to the city center.

The curved form of the building was inspired by the Mediterranean spirit and design culture of Barcelona, by the climate, and by the client's program. Two towers contain laboratory spaces and offices in compact groups that encourage close teaming. The towers are joined at each level across a ventilated atrium which will encourage communication and spontaneous interaction throughout the organization. The atrium will serve as a greenhouse for native vegetation, including moss that gains its nourishment from evaporative cooling mist. The atrium will also be a periodic hatching site for the native butterflies of Catalunya. In fact, the butterfly theme is carried throughout the building, incorporated in "wings" of patterned tile at each floor level.



MEADOW FARM

Organic Farm and Residence

Northern California
Completed 2013

Area 5,800 sq ft

Program Organic farm and private residence

Awards

LEED Platinum Certified

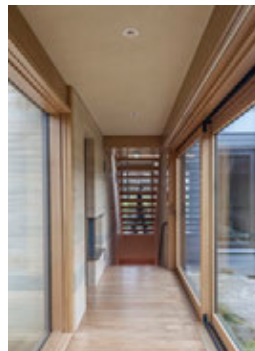
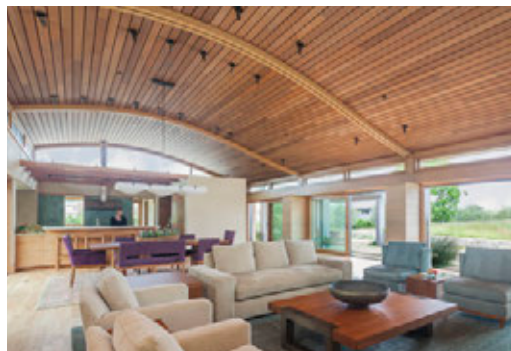
Team

William McDonough + Partners, Architect;
Carla Carstens, Interior Design; Bernard Trainor
+ Associates, Landscape Architect; Tipping
Structural Engineers, Structural; Timmons Design
Engineers, MEP; Sherwood Design Engineers,
Civil; Horton Lees Brogden, Lighting Designer;
Davis Energy, LEED Consultant; Green Building
Specialist, Inc. LEED Consultant

A deep connection to place is achieved using gently curved roofs echoing local topography and rammed earth walls constructed of site-sourced soil.

William McDonough + Partners collaborated with the client to develop a vision for an organic farm and residence inspired by and rooted in its place. The site is designed to transition from a cultivated to a native landscape, from orchards and garden to meadow and coastal live oaks.

The main house, located at the intersection of structured and native landscape, is a series of pavilions with rolling zinc roofs that echo waves and wind patterns coming off the ocean just visible from the property. Striated color patterns in rammed earth walls extrapolate the gentle curve of existing site topography. The farm is a net energy exporter and includes comprehensive rainwater and greywater harvesting. The project is LEED Platinum certified and is a pilot project in the Sustainable Sites Initiative™ (SITES™).



FORD MOTOR COMPANY

Ford River Rouge - World's Largest Green Roof

Dearborn, Michigan
Completed 2003

Client Ford Motor Company

Area 1,300,000 square feet

Awards

AIA Michigan Sustainable Design Award, 2003

ASLA Michigan Honor Award, 2003

Team

William McDonough + Partners, Design Architect;
Arcadis Giffels, Architect of Record, Civil MEP
and Structural Engineers; Walbridge Aldinger,
Construction Manager

William McDonough + Partners led the master planning and revitalization of this historic site and facility. The ambitious 20-year plan pioneered strategies and technologies for brownfield redevelopment, sustainable industry, corporate citizenship and environmental regeneration. The new master plan integrated a new form of stormwater management infrastructure that saved the company \$35 million in capital costs over conventional systems. At the heart of the new system lies a 10.5-acre living roof—the world's largest green roof installation at the time.

By relying on a landscape-based infrastructure requiring a minimum use of pipes, the new stormwater system cost less than one-third that of conventional practices, and created a powerful and highly-acclaimed business case model for sustainable design. The natural stormwater system also created new and revived habitats on the site for native birds, butterflies, insects and microorganisms, generating a larger biological order.

The Ford Rouge Center has won numerous awards from the design, business and construction industries. It is now recognized as having the one of the most iconic green roof installations in the United States which helped to transform the green roof industry.

“Ford Motor Company’s River Rouge facility has been transformed from an icon of the industrial revolution to a model of 21st century sustainable development.”

— William C. Ford, President, Ford Motor Company



FORD RIVER ROUGE

Visitor Experience

Conceived as both an extension and an integral component of the industrial landscape, this LEED Gold certified visitor center supports a key goal of the 20-year revitalization of the historic Rouge complex - the restoration of public access to a site that hosted hundreds of thousands of visitors from 1924 to 1980.

A three-sided glass observation platform rises above the roof, offering visitors a panoramic view of the 10.4-acre green roof installation on the adjacent assembly plant. Solar thermal panels in the entry plaza produce the building's hot water. Roof-mounted photovoltaic panels and a translucent PV array on the entry canopy convert sunlight into energy. The surrounding landscape embodies the same commitment to environmental design with its crab-apple orchard, apiary, bioswale system and a 40-foot high vegetated trellis around the building perimeter.



FORD RIVER ROUGE

Habitat Restoration

The green roof, seen below, was the most compelling solution to the stormwater problem at the Rouge. The idea made intuitive sense: The soils and grasses that comprise functional living roofs absorb water just like the soil and plants in a healthy landscape.

Within five days of the roof being installed, local killdeer had nested and laid their eggs in the sedum. Turns out that those who had said a 10-acre green roof was 'for the birds' were right after all.



HERO MOTOCORP | NEEMRANA FACTORY

The Garden Factory™

Neemrana, India
Completed 2014

Client Hero MotoCorp
Factory Area 62,599 square meters (Phase One)
Global Parts Area 22,444 square meters
Program Factory and global parts center

Awards
Platinum Rating from the Indian Green Building Council

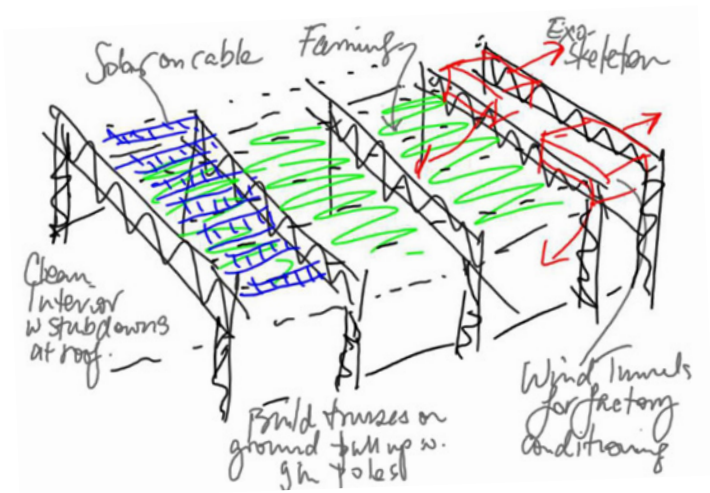
Team
William McDonough + Partners, Design Architect;
SEMAC, Executive Architects and Engineers;
Arup, Structural Concepts; Integral Designs,
Landscape Consultants; WEI, Air Distribution and
Cooling Engineering; WSP, Energy and Water
Concepts; JLL, Construction Management

What if a factory could be a garden of health and productivity?

With its Garden Factory™, Hero demonstrates how a manufacturing facility can be a healthy workplace and enhance the local economy.

Achieving a Platinum Rating from the Indian Green Building Council, the factory is designed to support Hero's product manufacturing, optimize productivity and create a healthy work environment:

- capturing water from the air
- producing fresh air/oxygen
- channeling carbon dioxide into soil for plants
- growing fresh food
- creating jobs on the roof
- harvesting clean energy
- providing heating and cooling



Concept sketch by William McDonough.
Garden Factory™ is a trademark of
William McDonough + Partners.



A BUILDING DESIGNED FOR ENDLESS POSSIBILITIES

The **factory's roof is supported from above**, freeing the interior space for current manufacturing tools and equipment and providing flexibility for future technologies and innovations.

HERO MOTOCORP | NEEMRANA FACTORY

On the Roof: Renewable Energy and Food Production

Rows of greenhouses alternate with rows of photovoltaic panels, providing clean power, supporting experimentation in hydroponic food production and supplying fresh food grown on site to the canteen. In the long term it is envisioned that food grown on the roof will supply the surrounding community.



HERO MOTOCORP | NEEMRANA FACTORY

A large **interior vegetated wall** serves as an air purification system that filters contaminants from the air and produces oxygen. **Condensation from the cooling equipment provides irrigation water** for the rooftop vegetation and interior biowalls, helping to conserve the precious water resources of India. **Skylights and eye-level windows** optimize energy use by flooding the factory floor, break rooms and a company canteen with natural, glare-free light during daylight hours.



METHOD HOME

South Side Soapbox

Chicago, Illinois
Completed 2015

Client Method

Area 150,000 square feet

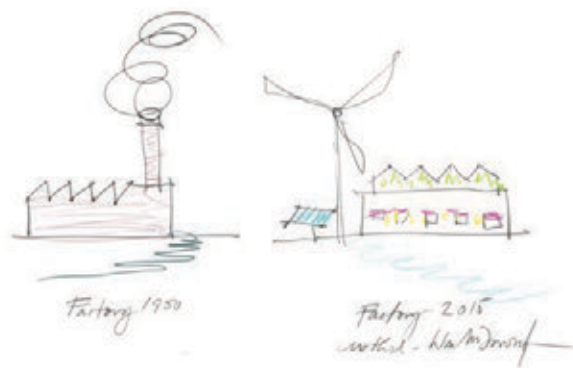
Program factory, offices, rooftop greenhouses

Awards

LEED Platinum Certified

Team

William McDonough + Partners, Design Architect; Summit Design + Build, LLC, Contractor; Heitman Architects Incorporated, Architect of Record; KJWW, Structural and MEP Engineers; Spaceco, Inc., Civil Engineers; Norris Design, Landscape Architects; Buro Happold, Renewable Energy Consultant; MBDC, Healthy Material Assessments; Gotham Greens, Rooftop Greenhouses; Nexus, Greenhouse Manufacturer/Installer; Envision, Solar



Method's manufacturing home is a clean home—using clean energy, water and materials to create innovative household products.

The first factory opening in the South Side of Chicago in nearly 30 years, Method Home: The South Side Soapbox sought to redefine the historic Pullman District community. Designed to be part of a future mixed-use development, Method envisioned employees living within easy transit access. The building provides daylighting to maximize employees' connection to nature and allowing visitors to look in through large windows and utilize the "front yard" as a park.

The front has colorful, welcoming awnings that serve as sun shades to help regulate heating and cooling needs. The 150,000 sf manufacturing facility was designed to epitomize Method's commitment to the environment and community well-being, while still maintaining a competitive budget. The rooftop greenhouse, the largest in the world (at the time) at 75,000 sf, provides fresh greens to the area, previously classified as a "food desert." The urban greenhouse was incorporated with the purpose of creating buildings modeled on natural processes through industrial agriculture.

The first LEED® Platinum manufacturing facility in its industry, The South Side Soapbox relies on a refurbished on-site wind turbine for 50% of its energy supplemented by solar trees that track the sun. Solar thermal panels provide hot water to office sinks and showers. These additions signal Method's commitment to sustainability in ways that are both symbolic and substantive

"Method is built from a belief that business should play a leading role in creating good society. William McDonough helped us translate that set of values into principles that we would manifest in the building. Design, as McDonough would say, is the first signal of human intention. This building is a signal of Method's intention to be part of a positive future."

— Adam Lowry, Co-Founder, Method



RESEARCH AND INNOVATION CENTER

Solar Orchard Concept | Net-Positive Energy

The Netherlands
Conceptual Design Complete

Client Delta Development / Fortune 500
Company (name withheld)

Area 18,500 square meters

Program R&D facility, offices

Team

William McDonough + Partners, Design Architect



Designed to embody Cradle to Cradle Design™ for the Circular Economy, the Research and Innovation Center allows for adaptation and resiliency. The Center focuses on enhancing connectivity not just between occupants and visitors, but also between people and the natural world.

Through a central “Hub,” The Center seeks to connect and facilitate collaboration at multiple scales, providing direct visual and physical connectivity internally and externally toward the campus. The building connects the research and innovation laboratories, which provide flexible spaces for work, experimentation and growth.

Premised as a structure that is energy and water positive, creating more than is needed to operate, the Center embodies the idea of “A Building Like a Tree.” A rooftop Solar Orchard optimizes the roof area for harvesting solar-derived energy while also integrating greenhouse space. Through a linear skylight in the atrium, a solar path of daylight lights the procession from the building entry and to the gardens beyond.





ICEhouse™ DAVOS

Innovation for the Circular Economy

Davos, Switzerland
2016, 2017, 2018, 2019, 2020, 2022

Client Hub Culture with support from SABIC

Area 90 square meters

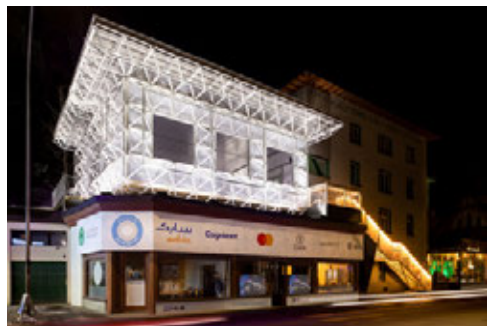
Program Meeting Space

Team

William McDonough, concept; William McDonough + Partners, Design Architect; WonderFrame, LLC, Builder; SABIC, Cladding Material Supplier

William McDonough + Partners and McDonough Innovation showcased a new structure in conjunction with the 2016 World Economic Forum Annual Meeting in Davos. Commissioned by Hub Culture with support from SABIC. The ICEhouse™ is an adaptable and reusable building inspired by the positive design framework described in *Cradle to Cradle: Remaking the Way We Make Things*, the Sustainable Development Goals of the United Nations and the reuse of resources implicit in the circular economy. The same structure has been used annually in Davos as an official meeting space since 2017.

ICEhouse™ is designed to offer visitors to Davos a curiosity of the opportunities of WonderFrame™. This special Davos pavilion is made of technical materials (polymers, aluminum and aerogel) which will be returned to industry at the end of their use cycle as part of this building. These elements can be endlessly used, reused or recycled in new products across generations.





The original creators and foremost implementers of the Cradle to Cradle Certified® Products Program

MBDC

Cradle to Cradle® Assessment and Leadership

Founded in 1995 by William McDonough and chemist Michael Braungart, MBDC has been advocating for endlessly resourceful Cradle to Cradle approaches, working with companies to intentionally design products which eliminate the concept of waste, use clean energy, value clean water and celebrate diversity.

MBDC's services help clients understand and implement the Cradle to Cradle Design™ Framework on multiple levels, from materials and products to packaging and corporate leadership:



We are leaders in Material Health Assessments

Our chemists have been providing material and product assessments, down to the parts per million, for over two decades.

We developed the Cradle to Cradle Design Framework

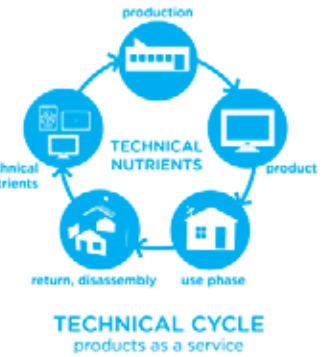
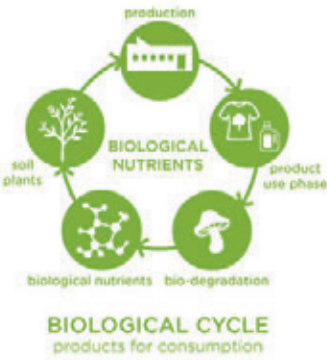
We have inspired and guided companies around the world to remake the way they make things.

We are the original creators of the Cradle to Cradle Certified® Products Program

We are among the foremost implementers of the program which is owned, developed and maintained by the Cradle to Cradle Products Innovation Institute., an independent, third-party, peer-reviewed program.

CRADLE TO CRADLE

In their book, *Cradle to Cradle: Remaking the Way We Make Things* (2002), architect William McDonough and chemist Michael Braungart presented a science-based design framework that eliminates the concept of waste and provides enduring benefits for society, from safe materials and circular economies to clean air, water and energy. The book put forward a design framework characterized by three principles derived from nature:



diagrams ©1995-2022 MBDC, LLC.

EVERYTHING IS A RESOURCE FOR SOMETHING ELSE

In nature, the “waste” of one system becomes food for another. Everything can be designed to be disassembled and safely returned to the soil as **biological nutrients**, or reutilized as high-quality materials for new products as **technical nutrients** without contamination.

USE CLEAN AND RENEWABLE ENERGY

Living things thrive on the energy of current solar income. Similarly, human constructs can utilize clean and renewable energy in many forms—such as solar, wind, geothermal, gravitational energy and other energy systems being developed today—thereby capitalizing on these abundant resources while supporting human and environmental health.

CELEBRATE DIVERSITY

Around the world, geology, hydrology, photosynthesis and nutrient cycling, adapted to locale, yield an astonishing diversity of natural and cultural life. Designs that respond to the challenges and opportunities offered by each place fit elegantly and effectively into their own niches.

Rather than seeking to minimize the harm we inflict, **Cradle to Cradle reframes design as a positive, regenerative force—one that creates footprints to delight in, not lament.** This paradigm shift reveals opportunities to improve quality, increase value and spur innovation. It inspires us to constantly seek improvement in our designs, and to share our discoveries with others.

WHAT IS CRADLE TO CRADLE CERTIFIED®?

The Cradle to Cradle Certified® is a globally recognized “gold standard,” science-based quality certification. It acknowledges continuous improvement and innovation of products and processes toward the goal of being not just “less bad” (net zero) but also “more good” (net positive) for people and the planet.



MBDC transferred an exclusive license for the certification program and methodology in 2010 to the Cradle to Cradle Products Innovation Institute, co-founded by William McDonough. Today, the Institute owns the certification program. It sets, develops and maintains the global standard through a multi-stakeholder process and runs the related Products Program.

Cradle to Cradle Certified® Products Program

Products and materials from any industry and country that are eligible to apply for certification. Since the program began, more than 700 companies from over 40 countries have participated in the Cradle to Cradle Certified® Products Program. The Cradle to Cradle Products Innovation Institute has issued over 1500 certificates covering more than 10,000 certified products in a variety of categories, including building materials, interior design products, textiles, fabrics, cosmetics, home care products, paper, packaging and polymers.

Levels of Achievement

There are four levels of product certification: Bronze, Silver, Gold and Platinum. In order to be certified at a certain level, a product must meet the minimum criteria for that level in all five criteria categories. The criteria in each category becoming increasingly demanding with each level of certification.

Version 4.0

The Cradle to Cradle Products Innovation Institute released Version 4.0 of the certification program in March 2021. This includes key updates for Product Circularity, Social Fairness and Clean Air & Climate Protection.

THE CRADLE TO CRADLE CERTIFIED® PRODUCT STANDARD

Cradle to Cradle Certified Version 4.0 is a comprehensive one-standard solution for addressing the critical sustainability and circularity objectives that define products made for tomorrow. The multi-attribute product standard continues to be developed, maintained and administered by the Cradle to Cradle Products Innovation Institute, an independent, third-party, not-for-profit organization. Products are assessed in five categories:



MATERIAL HEALTH: ensuring materials are safe for humans and the environment



PRODUCT CIRCULARITY: enabling a circular economy through regenerative products and process design



CLEAN AIR & CLIMATE PROTECTION: protecting clean air, promoting renewable energy, and reducing harmful emissions



WATER & SOIL STEWARDSHIP: safeguarding clean water and healthy soils



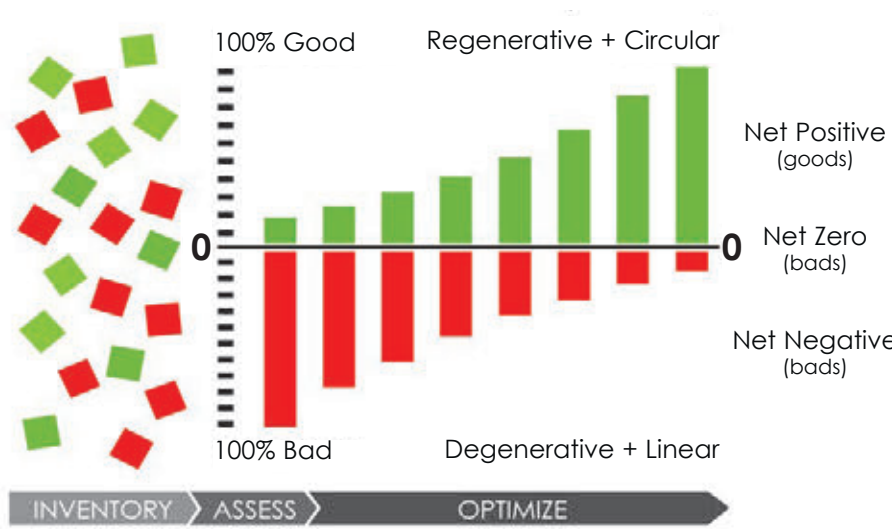
SOCIAL FAIRNESS: respecting human rights and contributing to a fair and equitable society

C2C Certified® Product Standard

ACHIEVING NET POSITIVE

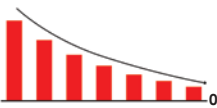
THE NET-POSITIVE CHART - INNOVATION + CONTINUOUS IMPROVEMENT

Products are often described as **goods**. MBDC designs and assesses products to make sure they actually are through its unique approach to innovation and continuous improvement:



Design Positive Chart © 2021 McDonough Innovation
Based on The Upcycle Chart © 1995-2021 MBDC, LLC.

THE NET-POSITIVE CHART Enables our clients to **1) inventory**, **2) assess** and then **3) optimize** products, processes and systems with positive intentions and beneficial goals.



**“LESS BAD”
NET ZERO GOAL**
Industry can do better than conventional, eco-efficient approaches which seek to reduce or minimize damage and typically portray reducing a negative footprint.



**“MORE GOOD”
NET POSITIVE GOAL**
By adding eco-effective approaches and integrating positively defined goals based on Cradle to Cradle® values and principles, we are able to direct innovation in a coherent and positive trajectory.

INVENTORY + ASSESSMENT + OPTIMIZATION

MBDC has been providing material and product analysis, down to the parts per million, for over two decades. We are an internationally recognized authority on material health and product optimization.

In addition to providing Assessments for the Cradle to Cradle Certified® Products Program, our services include:

Material Health Assessments

The MBDC Material Health Assessment (MHA) is based on the Material Assessment Methodology published as part of the Cradle to Cradle Certified Products Program. It goes beyond a simple supplier declaration of ingredients, to provide an in-depth, detailed report covering homogeneous materials inventoried to 100 parts per million and assessed for toxicity to human and environmental health. The report details the presence of hazardous materials; chemicals known to be carcinogens, mutagens or reproductive toxins; endocrine disrupters and any incomplete data.

Product Screens

MBDC’s product screens evaluate products for their potential for becoming Cradle to Cradle Certified® and can provide valuable guidance in selecting and procuring materials from several potential suppliers for use in the built environment.

Product Optimization

MBDC will analyze the results of a product inventory and assessment and guide you to improve product design and manufacturing operations to minimize negative impacts, optimize positive impacts and work toward being 100% good for people, planet and profits.

For any new or existing product or packaging design, MBDC can help you rethink and redesign it using the Cradle to Cradle Design™ Framework, select optimal materials, and plan for the future use cycles for the component materials.

CRADLE TO CRADLE® TRAINING

MBDC conducts inspiring, value-added, actionable workshops worldwide on applying the Cradle to Cradle Design™ Framework and The Upcycle Chart to business audiences.



Think® Chair Disassembled ©Steelcase, Inc.

MBDC also facilitates hands-on design workshops where design teams work in groups to apply the Cradle to Cradle Design principles to real world product designs. The workshops can be tailored to suit your organization's needs. Corporate environmental and sustainability programs can be mapped using the proprietary Upcycle Chart to help identify additional value-added opportunities.

In the early 2000s, following a keynote speech given by William McDonough, MBDC hosted a Cradle to Cradle workshop for the executives of Steelcase, Inc. Inspired by the concepts presented at these events, Steelcase invited a project manager from MBDC to join Steelcase's design team on the development of a new chair which would be a technical nutrient - designed to be easily disassembled with common hand tools and able to be returned for remanufacturing and endless reuse. The resulting product was the Think® chair, launched in 2004 as the first product to become Cradle to Cradle Certified®. Think became a global best seller, and one of the company's most popular selling products.

"The relationship forged with MBDC has been a potent catalyst for inspiration and innovation. Simply stated, the things we've learned as a result of our early relationship with [MBDC] have driven us to become a more sustainable, innovative, fit and relevant company. It has changed us, and continues to change us, profoundly and for the better." –Steelcase

CRADLE TO CRADLE CERTIFIED® BENEFITS

Cradle to Cradle Certified®, originally created by MBDC, is more than a recognized mark of product quality; it is a process that leads companies to make better products, better companies and better communities.

Results of the Certification Process

- **Benchmarking of a product's design** for safety to human and environmental health, sustainability of manufacturing processes and future use cycles
- **Defined trajectory for optimizing product design** and manufacturing processes
- **Expert evaluations** of product ingredients throughout the supply chain for toxicity hazards and risks in context of use
- **Third-party assessments** that can provide data to verify claims about your products, to meet regulations or to contribute to other certifications

Advantages of the Cradle to Cradle Certified® Products Program

- **Joining a community of innovative companies** that make certified quality products and use the power of business to provide social and environmental benefits in the circular economy
- **Use of the Cradle to Cradle Certified® marks** on product packaging and marketing materials to indicate commitment to continuous improvement and total quality
- **Recognition in green building certification programs** (USGBC's LEED V4 Rating System, BREEAM-NL 2014 v1.0) and preference for use in certain Cradle to Cradle®-inspired buildings, communities and developments.
- **Becoming "products of choice"** for numerous environmentally preferable purchasing programs

MBDC IS WHERE YOU START ON YOUR PATH TO CRADLE TO CRADLE CERTIFIED®

MBDC has decades of experience working throughout the supply chain to collect formulations, and evaluate product and manufacturing data to meet the requirements. MBDC supports and advises clients throughout the entire process.

1 ENGAGE MBDC TO REVIEW AND ASSESS YOUR BILL OF MATERIALS FOR CERTIFICATION REQUIREMENTS

- Conduct initial analysis to determine if it is within the scope of certification
- Cross-reference ingredients with the Banned Chemicals List
- Determine if there is a commitment to continuous improvement
- Conclude if your product meets the eligibility requirements in the Cradle to Cradle Certified® Product Standard

2 MBDC ASSESSES YOUR PRODUCT AGAINST THE PRODUCT STANDARD CRITERIA

- Work with you and your supply chain to collect data
- Evaluate data against the Product Standard criteria
- Partner with you to develop optimization strategies

3 MBDC SUBMITS AN ASSESSMENT SUMMARY REPORT TO THE CRADLE TO CRADLE PRODUCTS INNOVATION INSTITUTE FOR FINAL REVIEW AND CERTIFICATION

The Institute provides independent verification of assessment and issues certificate



4 MBDC WORKS WITH YOU TO CONTINUOUSLY IMPROVE

- Every two years, we work with you and your supply chain to gather new data for re-certification
- Evaluate data and progress on optimization strategies for continuous improvement

RECOGNITION FOR CRADLE TO CRADLE CERTIFIED®

Selected as a preferred product certification by several of the world’s largest retailers.

When brand-name retailers take a stand for safer, sustainable products, industry takes note. By adopting Cradle to Cradle as a third-party, multi-attribute certification and as a design framework, companies are not only empowering customers to make informed choices, but also encouraging their peers to adopt similar values.



SEPTEMBER 23, 2020
Amazon features Cradle to Cradle Certified® as part of their ‘Climate Pledge Friendly’ badge to make it easier for customers to discover and shop for sustainable products

Jeff Bezos and William McDonough were quoted in Amazon’s September 23, 2020 press release:

“Amazon’s new program will expand our reach and enable us to empower more brands to deliver safer and more sustainable products for the circular economy.” –William McDonough



Amazon, as part of its ‘Climate Pledge Friendly,’ badge, empowers customers to find and purchase products that are Cradle to Cradle Certified® and recognizes the standard as a leading certification for sustainable products.



Through the company’s Commitment to Sustainable Chemistry, Walmart encourages the use of Cradle to Cradle Certified® Silver and above products.



Walgreens/Boots Alliance is working to enable consumers to make informed choices by encouraging suppliers to obtain credible certifications such as Cradle to Cradle Certified®, and to make it easy for consumers to find these more sustainable products.



The Home Depot Eco Options program allows suppliers to use Cradle to Cradle Certified® and the Material Health Certificate from the Cradle to Cradle Products Innovation Institute at an achievement level of Silver or higher in the material health category to qualify for their program.

88% of the products
Shaw manufactures are
Cradle to Cradle Certified®



A Walk In The Garden
a collaboration with William McDonough

SHAW CONTRACT GROUP

Shaw's "We Want It Back" program results in a 10% savings from storing raw materials on customers' floor for reclamation (perpetual assets).

SHAW CONTRACT GROUP, a Berkshire Hathaway Company, made the groundbreaking decision in 2002 to apply Cradle to Cradle Design™ principles and introduce PVC-free commercial carpet tiles designed to be separated into component materials for carpet-to-carpet recycling. Each tile is labeled with a toll-free number that customers can call to have used tiles picked up for recycling. Shaw worked with McDonough and MBDC to assess the human and environmental health attributes of all ingredients and identify preferred substitutes, as needed.

ACHIEVEMENTS

In 2003, Shaw Industries and MBDC received the inaugural Presidential Green Chemistry Challenge Award from the White House and the U.S. EPA for its EcoWorx® backing.



Currently, nearly 90% of the products Shaw manufactures are Cradle to Cradle Certified® and have undergone a rigorous material health assessment, including residential and commercial carpet, carpet tile and hardwood flooring.

Shaw Industries moved to #1 in the U.S. market share for carpet tile and is now the world's largest carpet company.



Mirra® Chair ©Herman Miller, Inc.



HERMAN MILLER

100% of Herman Miller's electrical energy is from renewable resources.

"Bill McDonough had the drive, vision, and connections to make this protocol a standard across all industries. Also, McDonough was willing to put together resources for the implementation of his vision, therefore ensuring that C2C would be more than just a nice idea on paper. Finally, the 'virtuous closed loops' concept that is behind C2C enabled businesses to move beyond the traditional 'be less bad' to the 'consumption is good' paradigm. C2C is a godsend to business!"

—Mark Schurman, Senior Vice President of Supply Chain Management, Herman Miller

HERMAN MILLER'S dedication to doing more good extends beyond their adoption of Cradle to Cradle Certified® to their "Greenhouse " Factory and Offices in Holland, Michigan designed by William McDonough + Partners. To fully incorporate Cradle to Cradle Design™ into their practices and Design for the Environment guidelines, together we built a customized assessment tool that analyzed materials for their human health and ecological effects, recyclability and design for disassembly.

ACHIEVEMENTS

The first product designed from the beginning to end under the Cradle to Cradle Design protocol was the Mirra chair which - during implementation - led to the training of more than 300 employees. The chair was the first engineered product to use the Cradle to Cradle protocol and received considerable attention from customers who sought out environmentally sustainable products. The resulting protocol, employee engagement and product has led to Herman Miller further expanding their Cradle to Cradle product portfolio and securing brand recognition as a firm deeply involved in sustainability.



BEAUTY KITCHEN

100% natural beauty products
designed based on *Cradle to Cradle*

“From formulation within our supply chain to packaging and social impact, Cradle to Cradle Certified® provides us with a credible, independent improvement framework to confirm that our sustainable approach is the right one. Having this good design in place ensures good business can happen. It enables us to lead the industry by democratizing the circular economy with our reusable packaging and safe formulations. It also enables us to create a positive impact on people and planet in an accessible and scalable way through personal care products.”

—Jo Chidley, Founder and CEO, Beauty Kitchen

MATERIAL HEALTH: PLATINUM

The Abyssinian Oil Advanced Skincare range is **fully optimized for human and environmental health** to achieve **Platinum**, the highest level in the C2C Certified® Products Program

PRODUCT CIRCULARITY: GOLD

Products are identified as biological nutrients, containing ingredients that can safely return to the biological cycle. Beauty Kitchen aims to **source ingredients that are both renewable and biodegradable**

CLEAN AIR & CLIMATE PROTECTION: GOLD

Beauty Kitchen purchased **carbon offsets to counteract the greenhouse gas emissions** associated with 50% of the electricity used to manufacture these products

WATER & SOIL STEWARDSHIP: GOLD

All **process chemicals in effluent** related to the manufacture of the Abyssinian Oil Advanced Skincare products have been **fully assessed** for human and environmental health

SOCIAL FAIRNESS: PLATINUM

Beauty Kitchen has been a **certified B-Corp** since 2017 and all products are **Leaping Bunny Certified**



L'ORÉAL REDKEN

Available on Amazon
under its 'Climate Pledge
Friendly' badge



"From formulation to packaging and production, we're holding ourselves accountable to our sustainability goals across all of the brands within our portfolio," said Azoulay. "Cradle to Cradle certifications demonstrate our commitment to pushing the boundaries of sustainable product innovation throughout our value chain."

— Danielle Azoulay, former Head of CSR and Sustainability, L'Oréal USA

MATERIAL HEALTH: SILVER

Products are identified as **biological nutrients** with a strategy in place to attain Gold level

PRODUCT CIRCULARITY: GOLD

Both the shampoo and conditioner source from **renewable** and **biodegradable ingredients**

CLEAN AIR & CLIMATE PROTECTION: GOLD

The products' manufacturing facility is powered by **100% renewable electricity**

WATER & SOIL STEWARDSHIP: SILVER

All process chemicals in effluent which are related to the shampoo and conditioner have been **assessed with a strategy in place for optimization**

SOCIAL FAIRNESS: GOLD

Completed a **social fairness screen for all tier one suppliers** and a UN Global Compact self assessment of management, human rights, labor, environment and anti-corruption practices



APEX PLAZA
NET-POSITIVE ENERGY | MASS TIMBER
Designed by William McDonough + Partners
Charlottesville, VA | Under Construction

NORDIC STRUCTURES

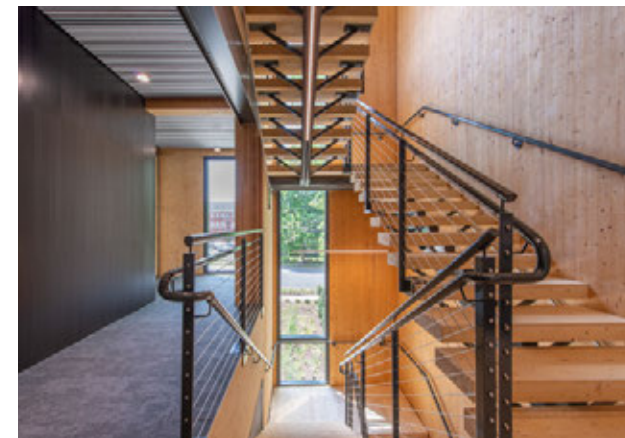
First in North America to achieve Cradle to Cradle Certified® Silver and Bronze for Mass Timber products

NORDIC STRUCTURES, achieved the world's first Cradle to Cradle Silver certification for their Nordic X-Lam and Bronze for their Nordic Lam and Lam+. The X-Lam met Gold qualifications in several categories, including Material Reutilization, confirming its circular potential.

William McDonough + Partners facilitated the relationship as part of a commitment to safe, healthy and circular building materials. WM+P's

design for HITT Contracting's Co|Lab, the first Mass Timber building in Virginia, utilizes both Nordic Lam and X-Lam panels. Nordic's products were also quickly identified for use in Apex Plaza, which will be the tallest Mass Timber building on the East Coast.

✓ **HITT CO|LAB**
NET-POSITIVE ENERGY
MASS TIMBER
Falls Church, VA | Completed 2019





HENRY ROSE + IFF

First 100% transparent fine fragrance

"I set out to see if it was possible to develop a line of fine fragrances providing you don't need to sacrifice quality and sophistication for safety. And we did it!" —Michelle Pfeiffer, Founder, Henry Rose

"This collaboration between Cradle to Cradle [chemists at MBDC], the Environmental Working Group and IFF is unprecedented. Not only have we broken new ground with our product — the first fine fragrance that is 100 percent transparent with its ingredients — but environmentalists and the fragrance industry were able to reach across the aisle to work together towards our common goal."

—Melina Polly, former CEO, Henry Rose

MATERIAL HEALTH: SILVER

Fragrance achieved Silver level and is free of molecules likely to cause allergic reactions as well as any ingredients on the Cradle to Cradle banned list

PRODUCT CIRCULARITY: GOLD

Henry Rose is created to **safely biodegrade in natural systems**. Bottles are made from **90% recycled glass**, which is also recyclable, and include compostable caps

CLEAN AIR & CLIMATE PROTECTION: GOLD

IFF is committed to using renewable energy in its manufacturing and has a goal to procure **75% of its electricity needs from clean, renewable sources by 2025**

WATER & SOIL STEWARDSHIP: SILVER

IFF **reduced water use in manufacturing processes by 66%** between 2010 and 2019, surpassing its goal of reaching 50% below 2010 levels by 2020

SOCIAL FAIRNESS: GOLD

Henry Rose **donated a portion of proceeds to farming families** in Haiti as part of a partnership with IFF and Heifer International



IPG

First certified recyclable carton sealing tape that is repuplable with the corrugate it is applied to

“Achieving the first Cradle to Cradle Certification® for WAT and the Western Michigan University OCC Equivalency certification for our non-reinforced WAT, in each case provide our e-commerce customers evidence that these products are made for a circular economy.” —Greg Yull, *President and CEO of IPG*

MATERIAL HEALTH: BRONZE

IPG committed to using the Cradle to Cradle Certified® Material Health protocol to assess their products and to **eliminate chemicals of concern**

PRODUCT CIRCULARITY: BRONZE

Certified water-activated tape can be **recycled and/or use recycled materials** in its production

CLEAN AIR & CLIMATE PROTECTION: BRONZE

Achieves energy goals by implementing **continuous improvement programs and employee training initiatives** across the entire organization

WATER & SOIL STEWARDSHIP: BRONZE

IPG's Manufacturing department was audited to ensure that its **water usage has minimal impact on the environment**

SOCIAL FAIRNESS: SILVER

IPG is **accountable to all stakeholders** within the company and the communities where they conduct business



C&A

Real-life example of how rigorously sustainable clothing that can return to nature and can also be accessibly priced.

“What we really need is other brands to go down the same path and to recognize that Cradle to Cradle Certification® is really one of the most well-thought-through, holistic, third-party, peer-reviewed standards for the circular economy.”

—Jeffrey Hogue, former Global Chief Sustainability Officer, C&A

MATERIAL HEALTH: PLATINUM

Achieved Platinum level - the **highest level in the Cradle to Cradle Certified® Products Program**

PRODUCT CIRCULARITY: GOLD

T-shirts are **recyclable** and can be **composted** - returned to healthy soil in about 12 weeks - at the end of their useful lives

CLEAN AIR & CLIMATE PROTECTION: GOLD

C&A purchased **offsets for 50% of purchased electricity and CO2 emissions** related to the t-shirt production

WATER & SOIL STEWARDSHIP: PLATINUM

All effluent is filtered. The only water imported from the local watershed is for drinking and utility purposes, as well as to compensate for process losses

SOCIAL FAIRNESS: GOLD

Both factories where the t-shirts are produced have impressive and **innovative social fairness initiatives and projects**



C&A

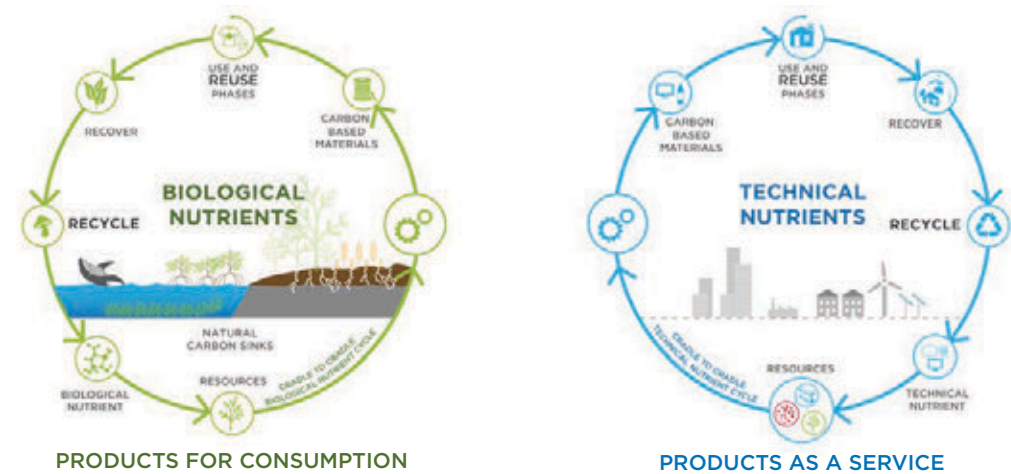
First Cradle to Cradle Certified® Gold jeans.

MBDC worked closely with C&A, their supply chain, Fashion for Good and other assessors – Eco Intelligent Growth (EIG) and EPEA Switzerland – to address challenges in designing such a complex product. The process included evaluating and optimizing the garment for human and environmental health, recyclability and biodegradability, renewable energy use and carbon management, water stewardship and social fairness.

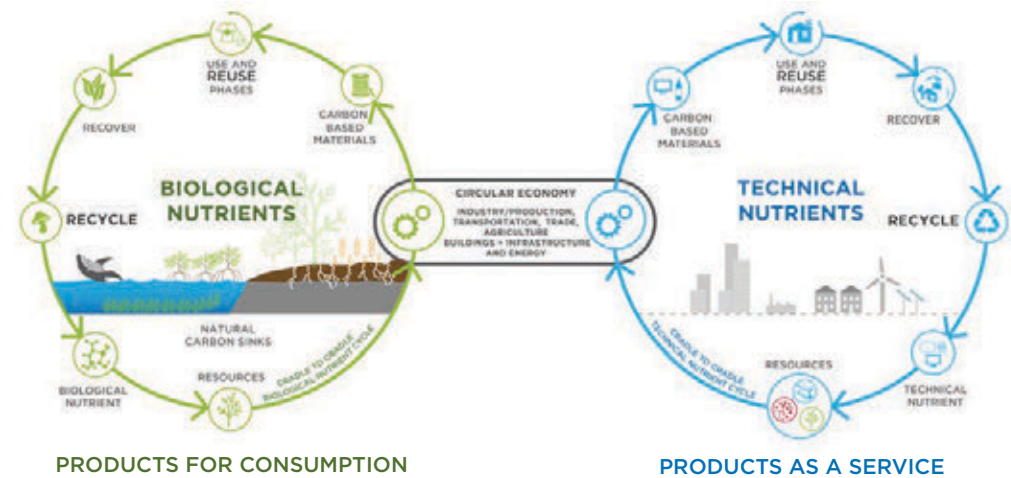
Designed in partnership with Fashion for Good, an open-source initiative co-founded by William McDonough, that supports the transformation of apparel culture toward a circular economy, C&A's new Cradle to Cradle Certified® denim garment release is accompanied by the toolkit *Developing Cradle to Cradle Certified® Jeans*. This toolkit includes concrete solutions on how to approach



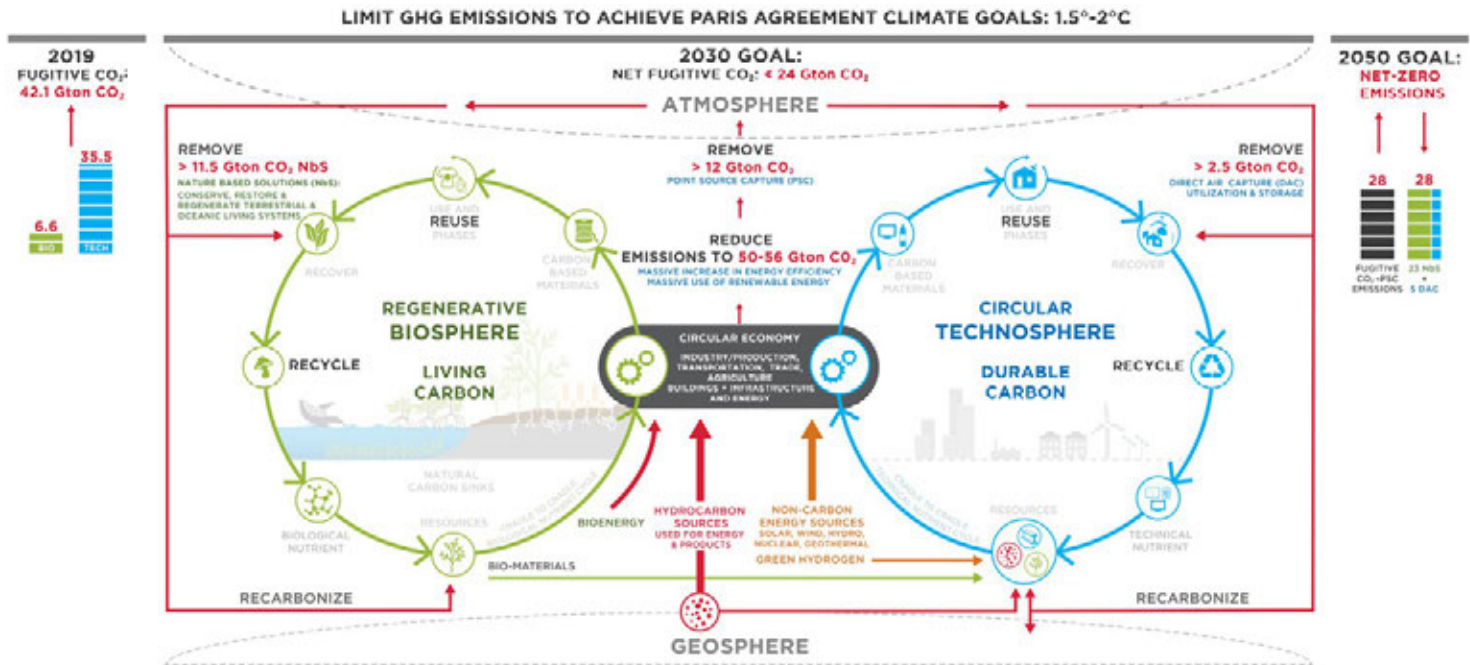
complex products and projects, such as jeans, which contain multiple technical and biological nutrient components (from thread to zipper) to reach product certification at the Gold level.



CRADLE TO CRADLE | 1998



CIRCULAR ECONOMY | 2005

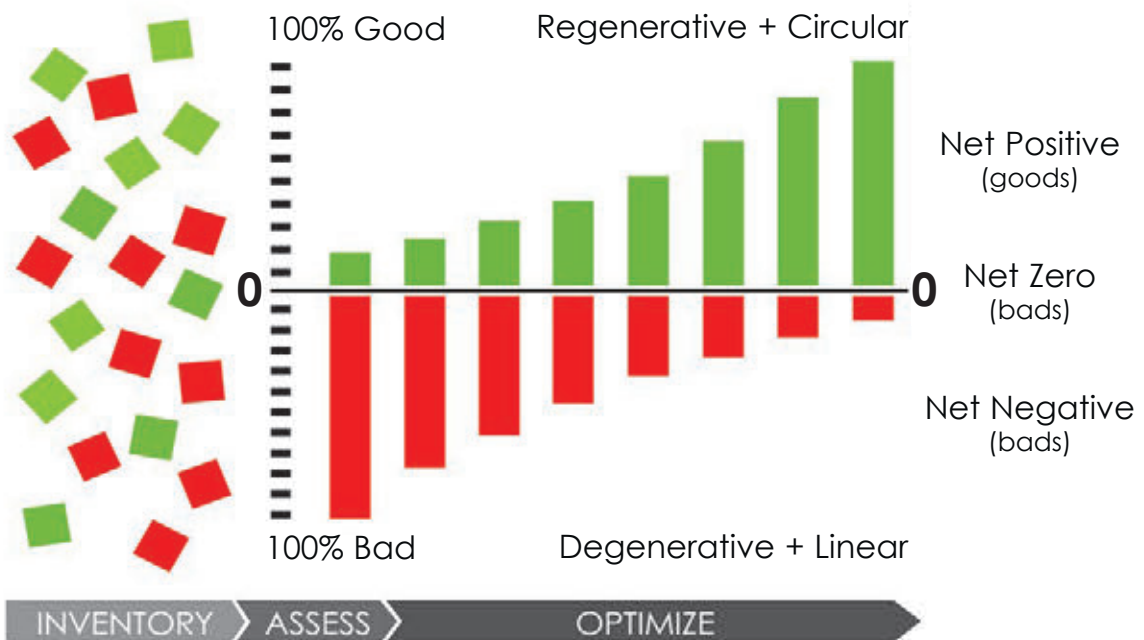


CIRCULAR CARBON ECONOMY | 2020

diagram ©2020-2022 McDONOUGH INNOVATION, LLC. – Original Concept: February 2020
This Version: March 2021 – William McDonough with Carlos Duarte

Our goal is a delightfully diverse, safe, healthy, and just world, with clean air, water, soil and power – economically, equitably, ecologically and elegantly enjoyed.

NET-POSITIVE CHART



Net-Positive Chart © 2021-2022 McDonough Innovation
Based on The Upcycle Chart © 1995-2021 MBDC, LLC.



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To work with Mr. McDonough and his companies please send a
request to media@mcdonough.com.

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