

William McDonough + Partners Architecture and Community Design  
with Dr. Michael Braungart Cradle to Cradle® Advisor

# TOWARD A CRADLE TO CRADLE



## PARK 20|20

The work benefits, the world benefits

*Park 20|20 is a development by:*

Delta Development Group | VolkerWessels | Reggeborgh Groep

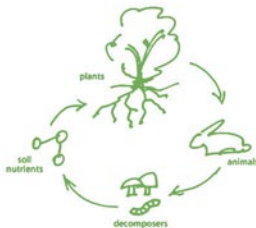


*Design is the first signal of  
human intention.*

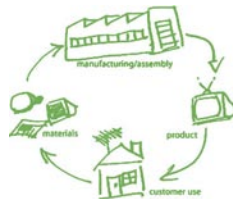
# CRADLE TO CRADLE *and* THE BUILT ENVIRONMENT

Cradle to Cradle® is an innovation platform developed by architect William McDonough and chemist Michael Braungart for designing beneficial economic, social and environmental features into products, processes and systems. 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 new opportunities to improve quality, increase value, and spur innovation. It extends design considerations to all of the cycles of life that run through our buildings and communities. It inspires us to constantly seek improvement in our designs, and to share our discoveries with others.



*biological metabolism*



*technical metabolism*

Cradle to Cradle is characterized by three principles derived from nature:

**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 infrastructures (for example, wastewater treatment) can be redesigned to become nutrient management systems that capture previously discarded resources for safe and productive reuse.

**Use renewable energy.** Living things thrive on the energy of current solar income. Similarly, human constructs can utilize renewable energy in many forms—such as wind, geothermal and 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.

This booklet outlines the vision of a Cradle to Cradle future at Park 20|20 along with strategies for achieving that vision in ways that create real, quantifiable, and ever-increasing value for all stakeholders.

# Harmony and Interdependence

Park 20|20 supports life, inspires delight, and expresses human design symbiotic with nature. Its buildings, like trees, harvest the energy of the sun, sequester carbon, make oxygen, distill water, and provide habitat. On-site wetlands and gardens recover nutrients from water. Fresh air, flowering plants, and daylight are everywhere. Birds nest and feed in a building's verdant footprint. Park 20|20 seeks to be a life-support system in harmony with energy flows, human souls and other living things.



*Encourage **healthy, supportive, diverse and sustaining relationships** between natural and man-made communities.*

## IMPLEMENTATION STRATEGIES

*Facilitate meaningful interaction between inhabitants and the outdoors.*

*Support the local community through active economic, social and ecological engagement.*

*Regenerate site and regional ecosystems by establishing healthy water flows and improving both air and water quality.*

*Integrate photosynthetic productivity into designs to generate biomass and build healthy soils in quantities that exceed predevelopment conditions.*

*Integrate species diversity to support greater diversity than before development.*

# Healthy Interiors

Park 20|20 celebrates the abundance of human creativity, culture and productivity, and rejects the idea that human growth and environmental health are incompatible. It demonstrates that good design can support the human experience with all that entails—fun, beauty, enjoyment, inspiration and poetry—and still encourage environmental health and abundance.





*Actively **support the health and well-being** of all occupants.*

IMPLEMENTATION STRATEGIES

*Create elegant and uplifting interiors.*

*Facilitate an engaging connection between occupants and dynamically available daylight.*

*Seek ways to enhance the comfort and well-being of building occupants.*

*Provide fresh, clean and comfortable air to everyone.*

*Assess available products for their human and ecological health attributes.*

*Select products that go beyond reducing harmful health effects to providing beneficial effects.*

*Protect inhabitants from adverse elements such as noise, pollution, mold and infestations.*

# Materials as Nutrients

In nature, there is no such thing as waste—the “waste” of one system becomes nurturing food for another. The elegant functioning of natural systems serves as a model for Park 20|20 to participate ever more creatively in its ecosphere. Its materials metabolism strives to cycle everything regeneratively, using natural and cultural networks to circulate biological nutrition (e.g. food, fiber, wood, water) and technical nutrition (e.g. metals, glass and plastics).



*Use products and processes that can **return safely to soil as nutrition or to industry for reuse** at the high levels of quality.*

## IMPLEMENTATION STRATEGIES

*Assess available products for their nutrient potential.*

*Prefer products which can be characterized as “biological nutrients” (those that can safely biodegrade and improve soil health) or “technical nutrients” (those that can be fully recycled, safely returning to high-valued uses in new products).*

*Identify products to optimize and work with manufacturers to reformulate them toward maintaining materials integrity.*

*Develop specifications processes that support biological and technical nutrient selection and recovery.*



# Materials Reutilization

No human creation lasts forever and no design can solve all issues at once. Park 20|20 embraces its evolution over time by incorporating generous flexibility and adaptability to accommodate changing needs and emerging technologies. It promotes positive ecological, economic and social effects not only through its design, construction and operation, but also through its eventual deconstruction and return to soil or to industry.



*Define systems that will safely return biological nutrients to the biosphere, and technical nutrients to the technosphere.*

## IMPLEMENTATION STRATEGIES

*Assess products for their recovery potential by both existing and emerging infrastructures.*

*Define use periods for the building, products, and materials, and select products that can be successfully recovered within each timeline.*

*Design buildings for disassembly. Give preference to construction practices which facilitate easy building disassembly and material reuse.*

*Develop long-term relationships with product manufacturers, such as product leasing arrangements, to ensure companies take responsibility for materials in the short and long term, and that they return nutrients to the biosphere and technosphere as appropriate.*

# Renewable Energy

Natural systems receive energy from the sun, earth and tides and respond with growth. Park 20|20 aspires to this same model. The project harvests sun and wind to create electricity and heat. Green spaces and rooftop gardens transform sunlight into verdant plant life which insulates buildings, sequesters carbon, makes oxygen, builds soil and filters air and water.



*Use **renewable energy**  
in quantities that meet or  
exceed the project's needs.*

#### IMPLEMENTATION STRATEGIES

*Leverage energy efficiency toward becoming fully renewably powered.*

*Assess local and remote opportunities for renewable energy generation, and implement when and where cost effective.*

*Incorporate flexibility to accommodate changing technologies for future renewable energy production.*

*Develop monitoring systems to create transparency in energy consumption patterns and inspire and empower individuals to optimize energy use.*

*Support the use of current solar income for mobility in transport to, from and in the area.*

# Water

Water is a basis of life itself. Natural systems endlessly cycle water within and around living creatures in an astounding variety of habitats and in ways that support and inspire with their beauty. Using nature as a model, Park 20|20 is centered around a body of water that not only provides beauty and habitat for a variety of species but also actively participates in Park 20|20's water purification "metabolism".





*Provide both **maximum water performance and optimal quality.***

IMPLEMENTATION STRATEGIES

*Leverage water efficiency to transition toward being “water positive” (where water leaves the system as healthy or healthier for the ecosystem than when it entered).*

*Study improvements to transform sewage treatment into a nutrient management system, including the capture of nutrients such as nitrogen, phosphorous and carbon for reuse.*

*Make water and its use visible, and inspire and empower individuals to celebrate its use.*

*Demonstrate water stewardship by reusing water and promoting healthy local ecosystems.*

*Seek to constantly upgrade water quality.*

# Seek Constant Improvement

As Park 20|20 is completed over time, it will increase renewable energy production, expand water cleansing and infiltration, and grow the body of materials which can be safely cycled in biological or technical loops. The end result of this process will be a place where growth is good—where the interactions of people, buildings, plants, animals, and insects create a trajectory toward a collaborative, inspiring, healthy and harmonious world.





Park 20|20 C.V. is the development partnership of Delta Development Group, VolkerWessels and Reggeborgh Groep. In close cooperation with the municipality of Haarlemmermeer the partnership will develop Park 20|20 in Beukenhorst Zuid in Hoofddorp into an economically attractive area for the whole region.

Park 20|20 C.V. is a reliable partner due to the combination of strong assets of what each individual company has to offer in the following sectors;- development, construction and finance. Their effective and efficient manner of working as a result of short decision making and authority is ideal for decisive, agile development.



**Delta Development Group** is an independent, privately owned real estate development and investment company. Since its foundation in the Netherlands in 1988, international expansion has taken place with offices in Germany, France and Italy. With more than 120 projects realized to date, Delta has a proven track record in the field of high quality project development and value-adding asset management. Its current portfolio with a focus on commercial real estate stands at over € 800 million. Delta is a driven, compact organization made up of highly skilled and experienced professionals, complemented by a network of excellent, long-term and reliable partners offering flexibility and strong added value.  
[www.deltadevelopment.eu](http://www.deltadevelopment.eu)



**VolkerWessels** is a closely-knit group of companies in the Netherlands and abroad. We work in partnership with our stakeholders to shape society in the field of construction, mobility, energy and communications provision and development, design, realisation, management and operations. The focal point of the activities of VolkerWessels is in the Netherlands. There are also offices in the United Kingdom, Belgium, Germany, Poland, Estonia, the United States and Canada. We operate in a decentralized organisational structure with 125 operating companies and with an average of 16,600 employees. [www.volkerwessels.com](http://www.volkerwessels.com)



**Reggeborgh** is a private investment company situated in Rijssen. Reggeborgh mainly invests in construction, property, telecom and energy. Its property investments are located in Netherlands (commercial real estate, large developments such as Park 20|20, Fokker Logistics Park and Waterfront); Germany (70% residential and 30% commercial real estate, managed by Allod which employs about 190 people); and Canada. Reggeborgh is involved in the entire real estate value chain: finance, acquisition, development, construction, investment as well as asset and property management. Reggeborgh has a real estate portfolio of about €1,2 billion and employs 20 people. [www.reggeborgh.nl](http://www.reggeborgh.nl)

## William McDonough

William McDonough is an internationally recognized strategic thinker, architect and designer, as well as winner of two U.S. presidential awards: the Presidential Award for Sustainable Development (1996); and the Presidential Green Chemistry Challenge Award (2003). He also received the National Design Award in 2004. In 2007, Mr. McDonough was elected an International Fellow of the Royal Institute of British Architects. Time magazine recognized him as a “Hero for the Planet” in 1999, stating that “his utopianism is grounded in a unified philosophy that—in demonstrable and practical ways—is changing the design of the world.”

Mr. McDonough is the founding principal of the architecture and planning firm William McDonough + Partners, the lead design firm of Park 20|20, as well as principal and co-founder of McDonough Braungart Design Chemistry. He also is a venture partner at VantagePoint Venture Partners in San Bruno, California. Mr. McDonough has written and lectured extensively on his design philosophy and practice. He and Dr. Michael Braungart co-authored *The Hannover Principles: Design for Sustainability*, published in 1992, and *Cradle to Cradle: Remaking the Way We Make Things*, published in 2002 by North Point Press.

Through his firm McDonough Consulting, Mr. McDonough provides sustainability visioning services, targeted ideas, product concepts and solutions to design and environmental risk issues for CEOs, corporate officers, senior executives, organizations, product development teams and project managers.

## Michael Braungart

Michael Braungart is a chemist and founder of EPEA International Umweltforschung GmbH in Hamburg, Germany, and co-founder of MBDC. Dr. Braungart's work has been published in numerous journals on science, public affairs, design and environment in Europe and the US. He and William McDonough co-authored *The Hannover Principles: Design for Sustainability*, published in 1992, and *Cradle to Cradle: Remaking the Way We Make Things*, published in 2002 by North Point Press.

Dr. Braungart is currently a professor of Process Engineering at Universität Lüneburg (Germany). Recently, he accepted a visiting professorship at the Darden School of Business, lecturing on such topics as eco-efficiency and eco-effectiveness, Cradle to Cradle Design and Intelligent Materials Pooling. Dr. Braungart also serves as Scientific Manager of the Hamburg Environmental Institute, the nonprofit research center which produces the "Top 50 Study": an evaluation of the environmental performance of the world's largest chemical companies.

Dr. Braungart's work addresses topics from particles to policy. He has initiated worldwide scholarly and scientific inquiry into the adverse environmental and physiological impacts of industrially-produced consumer goods. Dr. Braungart currently concentrates his efforts at MBDC and EPEA by working with innovative companies on issues of materials assessment, waste and energy balances, Cradle to Cradle Design, design for disassembly, and new product design.



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