

The Growing Green Cities Principles

Prepared for:
The City of Almere

William McDonough + Partners
Architecture and Community Design

Table of Contents

Executive Summary

From Garden Cities to Green Cities

By William McDonough

From Values to Value

The Almere Principles Revisited

The 7 Principles (2008)

The Almere Principles & Growing Green Cities

The Principles, the Floriade, and the Growing Green Cities Vision (2015)

Growing Green Cities Starting Points for Area Development

Executive Summary

In 2008, the Municipality of Almere and William McDonough + Partners developed *The Almere Principles*, a manifesto for sustainable development which articulated inspiring urban design guidelines for the city's future growth. As Almere prepares for the Floriade 2022, the city is applying the Principles to the development of the exposition site, and more broadly, to the realization of its expansive Growing Green Cities vision.

In the spirit of ongoing collaboration, William McDonough + Partners has provided a conceptual framework, informed by Cradle to Cradle® and circular economy thinking, to help translate the Principles into practices and support the evolution of Growing Green Cities. Recognizing the interdependence of city and nature sets the course. When the natural processes that support life—the currents and flows of the water cycle; the transfer of nutrients in healthy soil; the webs of life in gardens, forests and seas; the energy of the sun—inform the design of cities, urban growth is verdant and regenerative.

To create the conditions for regenerative growth, Cradle to Cradle thinking applies the intelligence of natural systems to human designs, envisioning green cities as living metabolisms, powered by the energy of the sun, in which two discrete nutrient flows—biological nutrition and technical nutrition—support healthy, diverse, delightful urban communities.

Attentiveness to nature's principles and an ethos of constant improvement makes Cradle to Cradle-inspired urban growth positive and beneficial, an essential, sustaining engagement with the world. Several decision-making tools we've developed amplify the benefits of growth. The Fractal Triangle, for example, illustrates the synergy between ecological, social, and economic concerns, showing how effective design decisions generate value in each sphere.

Most recently, as we've worked to integrate Cradle to Cradle-inspired ideas and the principles of the circular economy, we are developing ways to look at how creative values—the cultivation of beauty, art, and knowledge—can support the development of measurable value creation. An illustration of the process, a hierarchy which we call From Values to Value™, shows how positive goals and an ethos of continuous improvement creates multiple sources of value in multiple spheres. A city designed to enhance the health of people and nature, for example, could generate numerous forms of beneficial growth, its clean water, fertile soil, and fresh air supporting diverse ecosystems, creative communities, and a vibrant economy—a harvest of value that can be enjoyed by everyone.

The Almere Principles, too, offer insights into creating positive, beneficial urban growth. Imagining the Almere Floriade through the lens of the Principles reveals not only the opportunity it presents to build an extraordinary urban district, but also how Almere has already taken giant steps toward realizing a successful exposition and a bright future for the city and the region. Not least, the city translated the Principles into the successful bid for Floriade 2022 and the comprehensive Growing Green Almere vision put forth in these pages. A principle-by-principle review of the opportunities presented by the Floriade shows a deeply committed city growing into its healthy Feeding, Greening, Energizing mission.

Sustaining that mission depends upon continuously enhancing the integration of city and nature, in every design, every day. The Growing Green Cities Starting Points make good design second nature,

providing a detailed set of specific practices that lay the foundation for regenerative urban growth. By applying these principles and practices, Almere will create an innovative green city district on the Weerwater that will embody its civic values and present to the world a vivid, operative example of a dynamic city of tomorrow – a living, breathing, Growing Green City.

From Garden Cities to Green Cities

William McDonough, FAIA, Int. FRIBA

In 2008, The Municipality of Almere and William McDonough + Partners collaborated on *The Almere Principles*, which applied the original principles of sustainability to the specific task of developing hopeful, encompassing guidelines for the city's future growth.

In his essay in *The Almere Principles* on the “deliberate creation” of cities, Adri Duivesteyn praised the spirit of collaboration that made the Principles an inspiring “prelude to action” and “a public manifesto that openly expresses the values that we find important for the city of tomorrow.”

As Almere prepares for the Floriade 2022, the world's largest horticultural exposition, the city is applying the Principles to the deliberate creation of a green city district on the Weerwater that not only embodies Almere's civic values, but presents to the world a vivid, operative example of a living, breathing, Growing Green City.

The opportunity at hand calls to mind one of the most powerful, formative ideas in the Almere Principles, which is incisively expressed in the postscript: “The words of the Almere Principles *will come alive and become meaningful through human action*” as Almere uses them to guide the development of the city as a whole. By design, Almere's values and intentions will be translated into a healthy urban ecosystem that fulfills the Feeding, Greening, Energizing, and Healthying mission of the Floriade 2022, and more broadly, the realization of the city's expansive Growing Green Cities vision.

The process is well underway. Indeed, the Growing Green Cities vision represents a profound transformation in city-making, releasing nature from the concentric rings of the ideal Garden City into the flows and fabric of everyday urban life. Building upon the rich traditions of Dutch farming, landscape design, and urban planning, the Floriade district will wed country and city; agriculture, horticulture, and the urban; and land and water, its Green City tapestry creating a healthy, productive urban ecosystem and a delightful place to live and work.

What then are the starting points for the development of an exemplary Green Floriade and for the long-term growth of Green Almere? What Principles, what defining values, will come alive to decisively guide the development of the city and the surrounding region? What human actions will cultivate positive, deep green growth?

Recognizing the interdependence of city and nature sets the course. That's not a new idea, nor merely a fashionable one. Indeed, there is a centuries-old dialogue between cities and natural processes that can be a source of inspiration and ideas for Growing Green Cities. In Alexandrian Greece, more than two thousand years ago, Hippocrates described in great detail the effects of wind, water, and terrain on the health of cities. In his treatise *On Airs, Waters, and Places* he advised physicians, politicians, and architects to “consider most attentively” how a city “lies as to the winds and the rising of the sun.” He noted how a city's orientation affects “the qualities of the waters,” and how waters “clear, fragrant, soft and delightful to drink” were a boon to good health.

In the 1st century BC, the Roman architect and civil engineer, Vitruvius, made attentiveness to “the salubrity of sites” a standard of city planning. In his ten-volume encyclopedia on the art of building, he described how the ground plans of cities—the orientation of streets, the arrangement of buildings, the construction of walls and dikes, and the location of harbors—could beneficially respond to the sun, wind, and sea. Urban plans in harmony with nature could promote health, beauty, pleasure, and civic pride. Meanwhile, intensely agricultural ancient cities wove human labor, technology, and knowledge into productive landscapes that transformed earth, air, water, and sunlight into food for people and food for thought, nourishing dynamic urban cultures.

As Cicero wrote in 45 BC, recognizing Rome’s dependence on working landscapes—and seeming to speak presciently to the Dutch—“we sow cereals and plant trees: we irrigate our lands to fertilize them. We fortify river-banks and straighten or divert the courses of rivers. In short, by the work of our hands we strive to create a sort of second nature within the world of nature.”

Every city is a sort of second nature within the world of nature. Though industrial cities overpowered natural processes, making second nature more an erasure of natural assets than a beneficial landscape, the urban has never been separate from the natural world. The story of cities has always been a story of the web of material connections between a metropolis and its hinterlands. In *Nature’s Metropolis*, William Cronon describes how the harvest of grain, fiber, lumber, and cattle that drove the growth of 19th century Chicago transformed the landscapes of both the city and the American West. On one end of the rails, the “ghost landscapes” of clear-cut forests and plowed under tallgrass prairie. On the other, the hovering dark cloud of coal smoke, the stench of meatpacking, and the sorrow of tenement dwellings in the Great Grey City.

Victorian London, too, was nature’s metropolis. Its web of material connections spanned the globe, creating enormous wealth and a notoriously grimy urban environment, which Charles Dickens called “the great and dirty city.” The dispiriting conditions of everyday life in London drove Ebenezer Howard to the countryside, while troubling conditions in industrial cities worldwide moved other well-meaning planners to try to rehabilitate the urban.

The celebrated modernist Le Corbusier believed city planning could solve the most persistent urban problems. In the interest of easing overcrowding, improving sanitation, and enhancing public health, his plans for mass-produced housing imposed an exacting geometry on the urban landscape that rigidly separated city and nature. His ideal urban plan, Ville Radieuse, a city of uniform towers set in manicured open space, separated his “machines for living in” from the places people worked, the vitality of the street, and the messiness of the natural world. In practice, a vision of brisk, clean urbanity cultivated more isolation than public good. Yet it is still influential. China is housing its fast-growing urban population in block after block of brutalist concrete towers, which spill from the urban edge into severe, barren landscapes—a practice of city-making, Vaclav Smil tells us, which consumed as much concrete in three years as the U.S. used in the entire 20th century.

Following a different path, Ebenezer Howard, late of London, and Frederick Law Olmstead before him, sought to re-introduce nature to the city by making the garden an integral part of urban design; Howard by planning “slumless, smokeless” suburban cities, Olmsted by building vast English gardens in the heart of the metropolis.

Howard's Garden Cities had a modest town at their center, connected by tree-lined parkways to concentric belts of farmland, forest, and neighboring village hubs. He believed orderly landscape structure would bring people into contact with nature as they went about their daily rounds. His green-belted Garden Cities offered a real alternative to life in the "great and dirty" cities of his time, but they proved to be too rigidly conceived, specifying not only the structure of the community, but also its way of life. Relationships between people, nature, work, and home were zoned and Howard's focus on self-sufficiency overlooked the interconnectedness of city and region.

Olmsted offered much more. While Romantics such as the poet John Clare were lamenting cities as "nothing less than over grown prisons that shut out the world and all its beauties," Olmsted was inviting beauty in. Remembered chiefly for his 1857 design for New York's Central Park, his legacy is much broader and far-reaching. The garden landscapes he designed embedded natural processes in urban systems, providing lasting benefits and inspiration.

"Through the design of parks and parkways," notes landscape architect Anne Whiston Spirn, Olmsted sought "to improve the city's climate, to alleviate air and water pollution, to mitigate floods, and to provide a naturalistic counterpoint to the city's buildings and bustling streets." He cultivated productive landscapes that amplified the processes of nature, creating life-enhancing urban habitats for people and other living things. Each, in its way, aligned natural processes with human values, performing beneficial city services while also creating experiences and relationships that profoundly expanded what a city can be.

Building on Olmsted's legacy, Spirn and a generation of architects and planners have continued to re-imagine the connections between city and natural processes, beautifully evoking the relationship and demonstrating the generative potential of designing *with* nature.

Spirn sees the city as "a granite garden, composed of many smaller gardens, set in a garden world."

It is the air we breathe, the earth we stand on, the water we drink and excrete, and the organisms with which we share our habitat. Nature in the city is a powerful force that can shake the earth and cause it to slide, heave, or crumple. It is a broad flash of exposed rock strata on a hillside, the overgrown outcrops in an abandoned quarry, the millions of organisms cemented in the fossiliferous limestone of a downtown building. It is rain and the rushing sound of underground rivers buried in storm sewers. It is the water from the faucet, delivered by pipes from some outlying river or reservoir, then used and washed away into the sewer, returned to the waters of the river or the sea. Nature in the city is an evening breeze, a corkscrew eddy swirling down the face of a building, the sun and the sky...It is the natural processes that govern the transfer of energy, the movement of air, the erosion of the earth, and the hydrologic cycle.

The city is part of nature.

With every breath, it seems, Spirn affirms and draws inspiration and ideas from the interdependence of city and nature. It's a wellspring for Cradle to Cradle® thinking and Growing Green Cities too. When cities participate creatively with nature, when we recognize healthy, productive natural systems as the model for good design, urban growth enhances life and generates an abundance of ecological, social, and economic value.

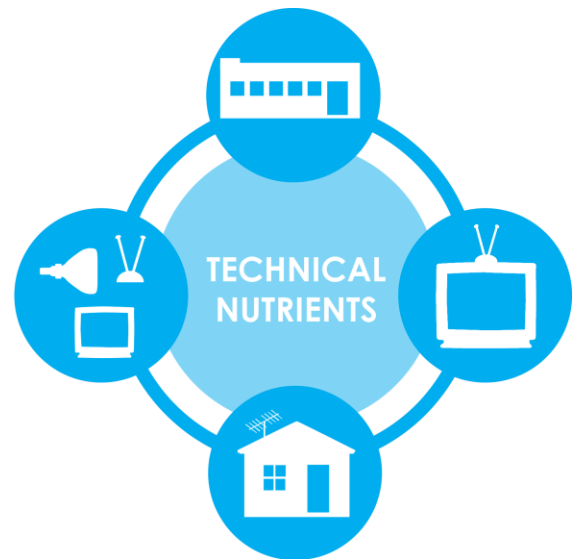
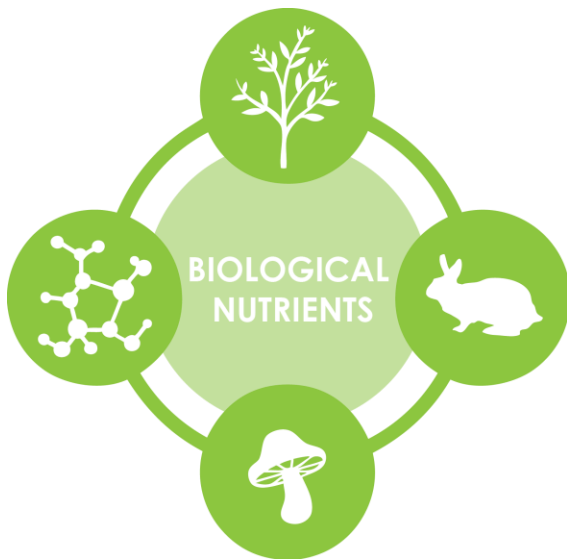
A Growing Green Cities approach to city planning integrates, and makes visible, the natural processes that sustain life, creating healthy, supportive relationships between nature and human communities. By design and the generative power of life, those relationships grow into dynamic, synergistic systems teeming with productive activity. At the landscape scale, Growing Green Cities create networked ecologies that generate energy, sequester carbon, cleanse water, and circulate nutrients, operating as a dynamic environmental system.

Built upon such supportive, beneficial connections, even a factory can be a welcome neighbor. A clean, healthy factory equipped with a solar array, vegetated air-purification walls, rooftop greenhouses, daylighting, and free-flowing fresh air becomes a producer of far more than consumer goods—it generates an abundance of benefits: Healthy food, clean water, and fresh air for people; carbon dioxide and irrigation water for plants; clean energy and jobs for the community. The building, like a tree, is photosynthetic and productive, its relationships with its surroundings mutually beneficial. It’s not simply a “machine in the garden” nor a “garden in the machine.” It’s alive; the machine *is* the garden.

Just so, the city is nature and nature is the city. They are one thing, *one biologically and technically active metabolism*—a living Growing Green City.

The metabolism of a living city is built on the principles of life described by Francis Crick, the co-discoverer of the structure of DNA. In his reflection on the nature of growth, *Of Molecules and Men*, Crick explained the essential characteristics of living things: Life likes to grow, take advantage of the free energy of the sun, and operate in an open metabolism of chemicals for the benefit of organisms and their reproduction. Life seeks to create and connect with more of itself, wastes nothing, and engages fruitfully with its surroundings.

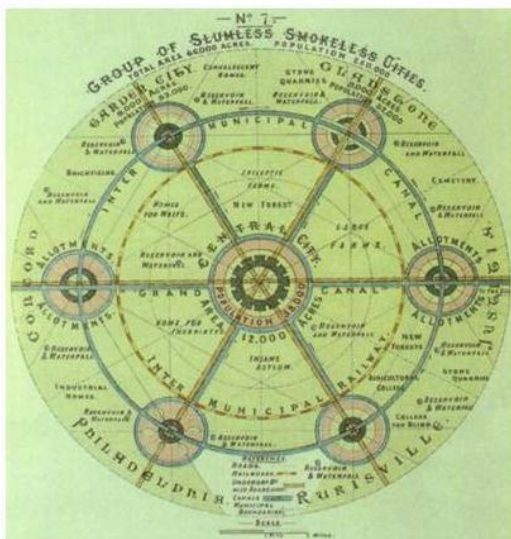
Our cities can do the same. By design, Growing Green urban systems take advantage of the free energy of the sun and engage fruitfully with their surroundings, endlessly circulating clean materials, energy, water, and organic matter – the biological and technical nutrients that feed the living city.



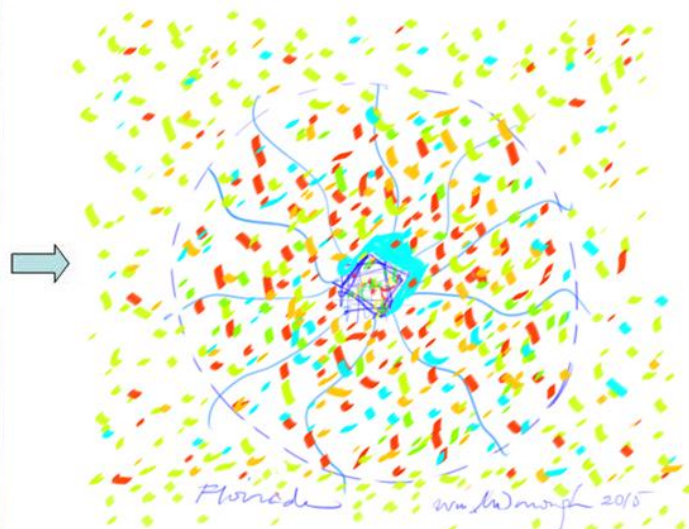
Enmeshed in life-giving energy flows, the urban fabric can be photosynthetic and productive—a supportive second nature feeding and energizing healthy communities. Responding to “airs, waters, and places,” and always the course of the sun, urban design can transform inert city spaces into delightful places to live, work, and play. Green roofs and other photosynthetic surfaces take productive ecologies to the landscape level, preserving soil nutrients; supporting plants, birds, and pollinators; and providing acres of land for natural water systems and urban farming. Integrated communities of buildings and systems are the organs and circulatory system of the city, generating metabolisms of viable size and density to serve as urban-scale infrastructure.

That’s good, regenerative growth, the kind of growth that makes a city a beautiful, dynamic, healthy place to live. Regenerative growth is the foundation of every Growing Green City. It underpins circular systems and energizes the knowledge economy; it feeds and flowers and greens; it enhances public health and creates the conditions for human flourishing; it supports creativity and social innovation; it connects the city to the region and the world; it cultivates opportunity, endless resourcefulness, and a bright, promising future.

When cities are built on regenerative growth, on the multiple benefits of productive synergies, they can positively define their future. That’s how Garden Cities evolve into Green Cities. Ebenezer Howard, lacking the knowledge and technology available to us today, could not have imagined technical nutrition, vertical greenhouses or photosynthetic cities, and so his urban ideal was as strongly influenced by the things he wanted to leave behind as those he wanted to cultivate and grow. His influential Garden City plan is notably titled “Group of Slumless, Smokeless Cities” and its spoke-and-hub structure divided urban activities, placing industry and other cities in another realm all together.



GARDEN CITY TO GREEN CITY



There’s nothing wrong with a slumless, smokeless city, of course, but now we can define our cities by *what we want to grow and encounter* rather than what we want to avoid. That is a rich and liberating prospect. Re-imagining Howard’s Garden City plan, we can place Almere’s Floriade district in the center

of the wheel, and rather than seeing the spokes as divisions in the local landscape, see them as vital pathways of relationship to the city, the region, and the world; networks and synapses through which will flow the abundance of benefits generated by the Almere Floriade and its celebration of life, growth, and the hopeful vision of Growing Green Cities.

From Values to Value

Our increasingly urban world needs hopeful visions of the future. We live in the age of cities, in the midst of the most dramatic transformation of urban life and the urban landscape the world has ever seen. Cities have always been magnets of opportunity, steadily drawing people from the hinterlands with the allure of “a certain energized crowding.” But urbanization on a global scale has happened in a heartbeat. It took more than 5,000 years of human development for the world’s urban population to approach one billion, in the early 1960s. In the short half-century since, it has more than tripled, reaching 3.5 billion in 2010. By 2030, according to the latest United Nations estimates, five billion people will live in cities, nearly half of them making their lives in homes, schools, workplaces and parks that do not yet exist.

Since the Almere Principles were published in 2008, the issues associated with urbanization—ongoing climate disruption; soil, food, and water crises: depleted resources; inequality and economic precarity; and pressing quality of life questions—have only become more urgent, which makes a transformative vision of urban growth all the more meaningful and essential. Cities need to grow to accelerate positive change. The Almere Floriade will catalyze regenerative growth as those involved in its design translate the Almere Principles into starting points and strategies that enhance the ecological, social, and economic health of Almere and the surrounding region, and inspire the growth of green cities throughout the world.

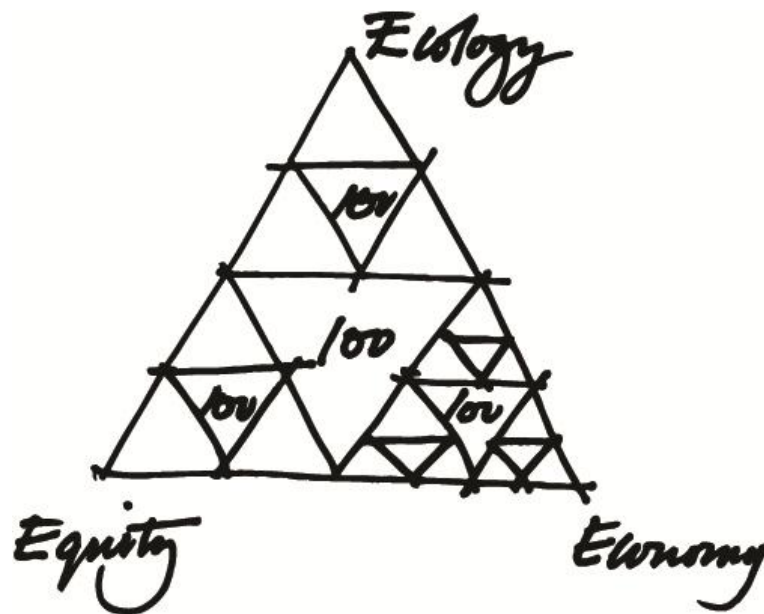
The Cradle to Cradle-inspired design process offers several tools for successfully translating principles into practices. The Fractal Triangle can be used to explore the ecological, social, and economic dimensions of each issue related to the development of the Floriade and the long-term growth of Almere. The Upcycle Chart is a design and continuous improvement tool that directs innovation in a positive, “more good” trajectory rather than one defined by simply trying to reduce, minimize, and avoid negative human activity. The recently created Values to Value™ diagram further enriches the process of value creation, showing how the Almere Principles define a positive trajectory from community values to the value-creating activities of Growing Green Almere.

This positive, values-first approach resonates with Almere’s ongoing efforts to embed sustainable growth principles into every layer of urban development and advance progress toward their positive vision. Stimulating regenerative growth, it will support the realization of Growing Green Cities aspirations, from encouraging public engagement and healthy lifestyles to developing circular systems that stimulate innovation, economic vitality, and the creation and sharing of knowledge.

The Fractal Triangle shows the relationships between ecological, economic, and social values and appraises how well design decisions cultivate value in each sphere. As we begin the design process for a new building, urban system, or community plan, we move around the triangle, exploring how different moves might affect performance and value creation in each category.

It’s an informative process. Working with the Fractal Triangle supports open, exploratory discussions throughout the design process. Having to take into account multiple values and perspectives supports intellectual creativity and keeps discussions from getting overwhelmed by ideology. The work breeds a practiced humility that appreciates the limits of design and avoids initiatives that would impose rather than encourage a particular value or goal. The process is also useful for determining where you are and

where you want to be on the path toward your goals, allowing designers to take positive steps as they are able and anticipate opportunities for ongoing improvement.



©1992 William McDonough

Beginning in the right corner of the Triangle, in the pure Economy sector, one might ask “Will this project make a profit?” The Equity sector raises questions of social fairness: “Are we finding ways to honor all stakeholders, regardless of race, sex, nationality or religion?” Moving to the Ecology corner, the emphasis shifts to imagining ways in which humans can serve nature: “Do our designs create habitat or nourish the landscape?”

Typically those new to the exercise see it as a balancing act, a series of compromises between competing interests meant to minimize the negative impact of a project. But working with the Fractal Triangle turns this notion on its head. Good design, rather than trying to simply be “less bad,” can generate *more good* by honoring a full spectrum of human values. Striving to generate benefits in each sphere sets a positive, creative course in which reducing harm is a step in the right direction rather than an end in itself.

As we move around the triangle, questions expressing a complex interaction of concerns arise at the intersections of Ecology, Economy, and Equity. In the Economy/Equity sector, for example, we consider questions of profitability and fairness. “Are all the people working earning a living wage?” As we continue on to Equity/Economy, our focus shifts more toward fairness. Here we might ask: “Do all citizens share the benefits of economic growth?”

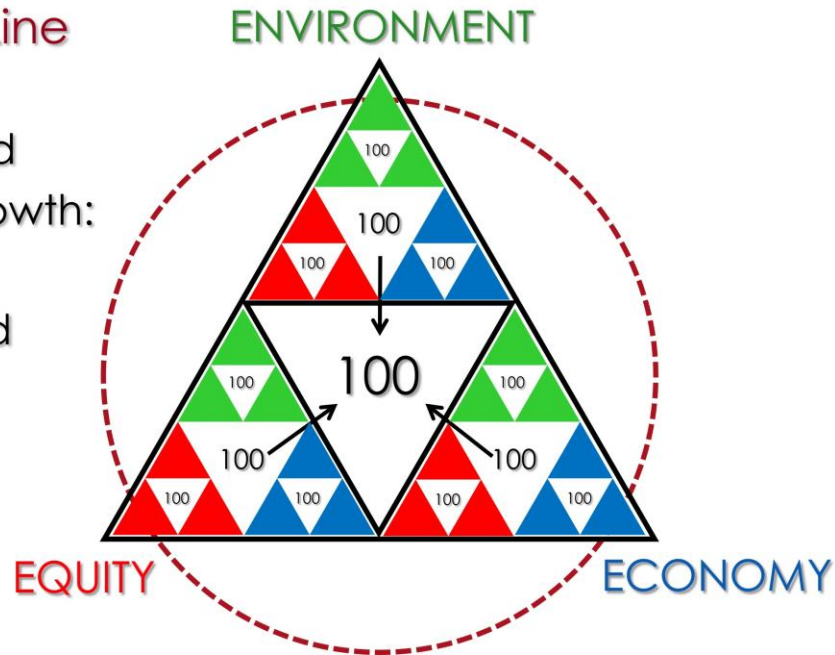
Often, we discover our most fruitful insights where the design process creates a kind of friction in the zones where values overlap. An ecologist might call these areas *ecotones*, which are the merging, fluid

boundaries between natural communities notable for their rich diversity of species. In the fractal triangle, the ecotones are ripe with opportunities.

In an endlessly interconnected world, the values-to-value perspective sees rich relationships rather than inherent conflicts. The goal is always to cultivate optimal value in all areas of the triangle. Whether designing an urban factory or outdoor public space we would ask: How can this project restore more landscape, purify more water, and grow more food? How much social interaction and joy can I create? How do I generate more safety and health? How much prosperity can I grow?

Triple Top Line

Execute and optimize growth:
Revenue
Public Good
Health



©2002 MBDC, LLC. We welcome proper use of this diagram. For use, please contact Ken Alston (ken@mbdc.com).

Questions such as these lead toward a deeper appreciation of the power of positive intentions and the generative capacity of good design. They lead to the Upcycle.

The Upcycle Chart helps to elaborate insights gained from the Fractal Triangle. It's a design and continuous improvement tool that charts a course built on purely positive intentions. Having seen how design decisions can generate more good by honoring a full spectrum of human values, one can use The Upcycle Chart to explore how design can multiply the benefits of urban projects, from a community development initiative to a regional plan.

When William McDonough and Michael Braungart used the term “upcycling” in *Cradle to Cradle* (2002), they were referring to the improvement of product quality from one cycle of use to the next. But as they observed how a commitment to Cradle to Cradle standards—to material health, renewable energy, clean water, social fairness, and the continuous re-use of safe products and materials in biological and technical cycles—generated productive synergies and a wide spectrum of value, they began to see upcycling as a pursuit of optimal positive impact at every scale.

THE UPCYCLE CHART: Continuous Improvement



©2013 MBDC, LLC. We welcome proper use of this chart. For use, please contact Ken Alston (ken@mbdc.com).

In the Upcycle, growth is driven by intention. A statement of intention places values first. It stresses the good, such as 'we will use and generate only renewable energy,' rather than the more commonly stated less bad; 'we will reduce our use of fossil fuels.' It initiates the process of optimizing positive impact, setting purpose-driven goals and defining the course from Vision to Value.

Putting values first produces far higher levels of innovation and performance than starting the design process with metrics, which tends to blur goals and aspirations with commonplace limits and benchmarks. When values and upcycling set the agenda—when, rather than simply inching forward bit-by-bit toward doing less harm, cities set positive, purposeful goals and seek continuous improvement in everything they do—design can create an abundance of value.

Building on principles, cities can innovate, scale up, and accelerate positive change, discovering leverage points where innovation is not only good for business, but tips the world toward sustainability and beyond.

Numerous benefits accrue from charting an optimal course. It clarifies and broadens, in the best way, how a city views itself. It changes how others view it. The projects the city undertakes, its way of doing

things and, indeed, its very existence, can be a living testimony to its support for a world of prosperity, social equity, and environmental health.

The **From Values to Value™** diagram illustrates and defines the steps from Principles, Visions, Goals and Strategies to Tactics, Measurement and Value.

FROM VALUES to VALUE™

VALUES (why, belief, your hope)
Where do you stand?

PRINCIPLES (your code of behavior)
Against what fulcrum do you lean your levers of change?

VISIONS (what)
What does the desirable future look like to you?

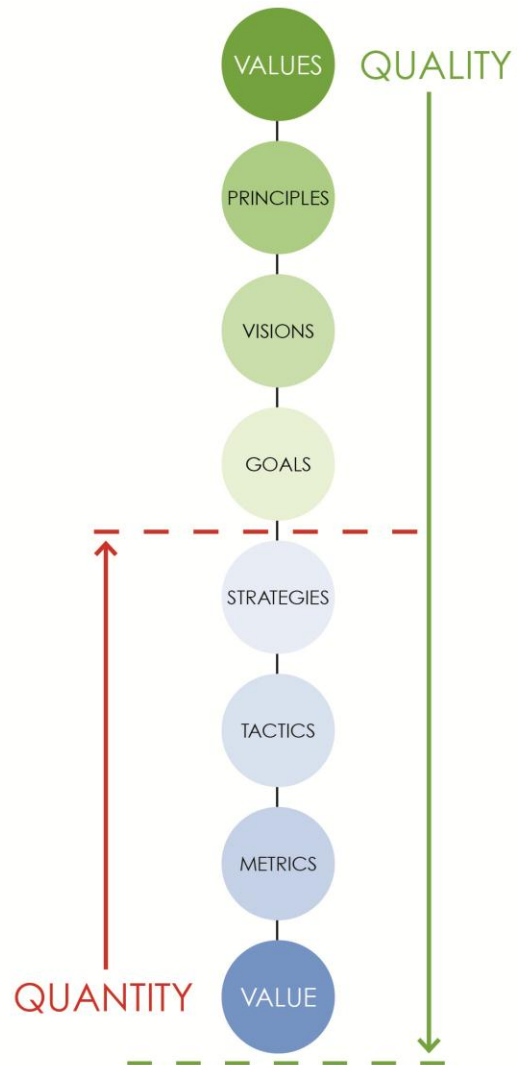
GOALS (your desired destination)
What gets you up in the morning that you want to achieve?
Where do you desire to move the world with your leverage?

STRATEGIES (your plan)
What is your plan?
What is your lever?

TACTICS (your actions)
What do you do everyday to pursue your goals or express your values?

METRICS (truth in data, measures of success)
How do you measure success?
What do you consider statistically significant?

VALUE (your gift)
What have you contributed to the world and future generations?



From Values to Value™ Concept and Diagram ©2015 McDonough Innovation. We welcome proper use of this chart. For use, please contact Michelle Amt (mamt@mcdonough.com).

The Fractal Triangle, the Upcycle Chart, and the From Values to Value™ diagram can help Almere navigate the journey from Garden City to Green City. Working with these tools at multiple scales, designers, planners, citizens, and city officials can clarify the Principles, identify a North Star, and establish the goals, strategies, and practices that will make the city's growth beneficial to the world and to future generations.

The process, of course, is well underway. With the Almere Principles, the city placed values first and seized the power of clear statements of intention, setting an inspiring goal that tells the world where Almere wants to be. Since the Almere Principles became the city's framework for development in 2008, the Principles were the starting point for the Draft for Almere Structure 2.0, informed the successful campaign for the Floriade 2022, and inspired the Growing Green Cities vision.

The Principles also valuably informed the Almere Floriade plan, notably the partnership with the Dutch horticultural industry; the development of the exposition site as a green city district, which will model sustainable urbanism and continue to grow; and the commitment to making the site a Living Lab of innovation and opportunity for the city of Almere and the surrounding region. These moves, and ongoing civic actions inviting citizen participation, have let the people of Almere know unequivocally that they are part of a creative, visionary city with a positive impact on the world.

The Almere Principles Revisited

The Almere Principles, composed in 2008, consist of seven starting points for sustainable urban development. The Principles were written especially for Almere, to offer guidance and inspiration to those involved in planning the city's growth, yet they address issues of global importance. They are based on the timeless laws of nature, yet open to adaptation as our knowledge of the world evolves. In that spirit, the following is a commentary on the ways in which the Principles can positively influence the development of Almere and the Almere Floriade, and indeed, already have. It begins with the original Almere Principles, followed by a principle-by-principle treatment, which includes William McDonough + Partners 2008 interpretation and a current interpretation offering observations on the Growing Green Cities vision and the design of the Almere Floriade site.

The Almere Principles (2008)

For an ecologically, socially and economically sustainable future of Almere 2030

Almere, a new town designed thirty years ago on land reclaimed from the sea, will be a liveable and healthy city in 2030. It will continuously renew and transform itself, thereby strengthening the qualities of its polycentric structure and its environment. Almere will be a vital community with diverse living and working opportunities, within a beneficial abundance of open space, water, natural and cultivated landscapes that can grow and change over time.

The Almere Principles are meant to inspire and offer guidance to those involved in further designing Almere as a sustainable city in the next decades. The realization of this vision is an act of culture and the expression of an optimistic approach to the future.

1. CULTIVATE DIVERSITY

To enrich the city we acknowledge diversity as a defining characteristic of robust ecological, social and economical systems. By appraising and stimulating diversity in all areas, we can ensure Almere will continue to grow and thrive as a city rich in variety.

2. CONNECT PLACE AND CONTEXT

To connect the city we will strengthen and enhance her identity. Based on its own strength and on mutual benefit, the city will maintain active relationships with its surrounding communities at large.

3. COMBINE CITY AND NATURE

To give meaning to the city we will consciously aim to bring about unique and lasting combinations of the urban and natural fabric, and raise awareness of human interconnectedness with nature.

4. ANTICIPATE CHANGE

To honour the evolution of the city we will incorporate generous flexibility and adaptability in our plans and programs, in order to facilitate unpredictable opportunities for future generations.

5. CONTINUE INNOVATION

To advance the city we will encourage improved processes, technologies and infrastructures, and we will support experimentation and the exchange of knowledge.

6. DESIGN HEALTHY SYSTEMS

To sustain the city we will utilize Cradle to Cradle solutions, recognizing the interdependence, at all scales, of ecological, social and economic health.

7. EMPOWER PEOPLE TO MAKE THE CITY

Acknowledging citizens to be the driving force in creating, keeping and sustaining the city, we facilitate possibilities for them to pursue their unique potential, with spirit and dignity.

The words of the Almere Principles will come alive and become meaningful through human action, by incorporating them on each level into every design for the city as whole.

THE ALMERE PRINCIPLES + GROWING GREEN CITIES

1. CULTIVATE DIVERSITY

To enrich the city we acknowledge diversity as a defining characteristic of robust ecological, social and economical systems. By appraising and stimulating diversity in all areas, we can ensure Almere will continue to grow and thrive as a city rich in variety.

Diversity is “a precondition for processes that make life on earth possible; food, nitrogen and water cycles, the production of clean air and biomass, and the regulation of the climate system” (4th National Environmental Policy Plan, 2001). Diversity is as important to global health as it is to our own quality of life. In natural systems, diversity is a sign of strength; it allows ecosystems to stabilize in the face of natural catastrophe and disease, and to evolve over time. However, the benefits of diversity are not confined to natural systems. In human communities, diversity expands a culture’s ability to create, innovate and thrive; it fosters a richness of engagement at all levels and strengthens community identity. Diverse economic systems are better able to weather changes in the marketplace, promote entrepreneurship, and stimulate innovation. Therefore, cultivating diversity in all realms – ecological, cultural, social, economic – strengthens health at both the local and global scale’.

William McDonough + Partners (2008)

A GREEN CITY IS A DIVERSE CITY

Cultivating diversity represents the flowering of Green, a shift from spatial structure as the defining feature of Garden City-variety Green, to the energizing potential of urban programs that creatively mix, layer, and cluster ecology, technology, enterprise, and social innovation. Bringing to life hybrid landscapes that support and energize urban communities, Growing Green Cities will become prismatic, generating productive synergies and benefits in multiple hues.

The layering and clustering of themes and programs in the Growing Green plan makes good use of the innovation platform presented by the Almere Floriade. The Arboretum layers Healthying, Energizing, Feeding, and Greening themes, while the Living Lab landscape is designed as an intelligent circular system, engaging nature in the generation of energy, the circulation of water, and the production of food. Biologically and technically active, stimulating interactions between natural processes and human communities, urban landscapes such as these embody the resilient, life-enhancing qualities of complex living systems, which become more productive as their diversity and connectedness grow.

Cultivating diversity also fosters equality, freedom, and dignity. As Aristotle wrote: “A city is by nature a plurality...the city is for each and every one.” Cities thrive in as much as they support human flourishing. A city for each and every one empowers civic participation. It seeks to create the conditions in which people are free to nurture and enact their capabilities. By generating opportunity and enhancing the urban experience, the Almere Floriade and Growing Green Cities will engage the public imagination in the process of building beautiful, diverse, verdant cities that enhance the capacity of every community to create, thrive, and contribute to the well-being of the world.

2. CONNECT PLACE AND CONTEXT

To connect the city we will strengthen and enhance her identity. Based on its own strength and on mutual benefit, the city will maintain active relationships with its surrounding communities at large.

All inhabitants of an ecosystem are interdependent. As global and local communities become inextricably linked, the boundaries of ecosystem have blurred; local problems have become global problems, and in the same way, local solutions have the power to change the world. Thus, every community is involved in maintaining the earth’s health – economically, socially, ecologically – and we all must work together in creative ways for the success of the whole. This important work begins at home. By deeply engaging with our local communities and their social, cultural and economic forces, and by connecting to local energy and material flows, we can create sustaining economies, communities and ecologies that, in turn, positively contribute to both regional and global health.

William McDonough + Partners (2008)

A GREEN CITY IS A CONNECTED AND SENSITIVE CITY

The Almere Floriade presents a wonderful opportunity to strengthen and enrich the city's identity and cultivate beneficial relationships with its nearby neighbors in the Amsterdam metropole, the Randstad, and the European Community, as well as with distant green cities throughout the world. The Floriade plan admirably translates Connect Place and Context into a coherent agenda for the city's deep engagement with place and its emerging role as a regional hub and exemplar of connectivity and collaboration. Indeed, Almere is a consummate connector, linking the Amsterdam metropolitan region with the ecologically rich areas of Lake Markermeer and the National Park Oostvaardersplassen, and the fruitful agricultural and horticultural polders of Flevoland.

As the Growing Green Cities vision suggests, Almere will define itself and become the living heart of the Netherlands by embracing "what is already there": a city on the banks of the Weerwater; a landscape of waterways, islands, forests, and fields; an ecotone and artery connecting fertile Flevoland with the markets of metropolitan Amsterdam. Embedding agriculture in everyday urban life, celebrating the relationships of living things, nurturing diverse food cultures, and making visible the city's life-giving flows of food, water, and energy will enhance Almere's existing qualities and establish it as an inspiring urban ideal. Likewise, the commitment to "collaboration in word" with citizens, politicians, innovators, and urban professionals at home and abroad, and "collaboration by deed" via the founding of a Growing Green knowledge cluster, will make Almere a powerful catalyst of sustainable growth in the region.

Significant steps have already been taken. Almere recognizes that "what matters most is creating the conditions that will allow the city's full potential to manifest itself and thrive." The city is building civic identity by inviting residents, professionals, businesses, educators and entrepreneurs to participate in the development process via an open network platform and exchanging knowledge with other cities that have embraced growing green, such as Toronto, Lima, Milan, Taipei, Shenzhen, and Amsterdam.

Actions such as these will further cultivate Almere's identity and the qualities of its unique place in the world, manifesting and enriching its particular excellence and building partnerships that contribute to regional and global health.

Imagine Almere even more deeply and fruitfully engaged in the Netherlands' Sustainable Region, creating value by working with surrounding communities to accelerate the growth of green cities and urban enterprises built on cradle to cradle and circular economy thinking. The stage—and the infrastructure—is being set for an era of knowledge-based enterprise in the heart of the Netherlands. As in 2008, "the physical, social and economic relationships with Amsterdam and Schiphol Airport will continue to be crucially important," as will the evolution of design for sustainability. The design strategies of the Almere Floriade will position the city to celebrate its place in the world, upcycle its connections, and become a flourishing hub of Green City life, thought, and enterprise for the 21st century.

3. COMBINE CITY AND NATURE

To give meaning to the city we will consciously aim to bring about unique and lasting combinations of the urban and natural fabric, and raise awareness of human interconnectedness with nature.

Humans have an innate need to connect to nature. Studies have shown that providing connections to nature increases health and productivity in office workers, improves rates of recovery and reduces pain

levels among the sick, lowers stress, and raises cognitive levels. The connection between nature and humans is not merely psychological; we rely on nature's abundance for our very existence. Clean air, water and soil feed our communities and provide the building blocks, both literally and figuratively, for their growth. Even the most urban conditions still feel the heat of the sun, experience the change of the seasons, and participate in nature's cycles. Raising awareness of this interconnectedness promotes responsibility and respect for nature, and encourages new models of growth that will enhance and sustain the natural world.

William McDonough + Partners (2008)

A GREEN CITY IS A NATURE-INSPIRED CITY

City and nature have been enmeshed for as long as there have been cities, and we shall always be in a relation of interdependence with surrounding ecological systems.

The Almere Floriade presents an opportunity to show how a 21st century city can not only reveal and invigorate its relationship with the natural world, but cultivate growth that enhances the health, beauty, and biodiversity of the urban landscape. In the spirit of the flowering of Green, the Almere Floriade can vividly enhance the connections between urban and natural systems, establishing mutually beneficial relationships between city and nature.

Even fast-growing cities can develop healthy relationships with their surroundings. Enmeshed in life-giving energy flows, the urban fabric can be restorative and photosynthetic—a supportive second nature making food and oxygen, filtering water, restoring soil health, and creating habitats for living things. Coherently designed urban metabolisms, encompassing the city and countryside, can effectively circulate biological nutrition and technical nutrition, supporting agricultural and urban economies, restoring natural systems, and enhancing regional connections.

The Almere Floriade's tapestry of gardens, its arboretum, its celebration of life—its full-throated “ode to green”—will surely make visible many rich, supportive relationships between city and nature.

Growing Green Cities will enhance those relationships, integrating other urban natures, such as green roofs, garden factories, and photosynthetic surfaces, into the Floriade development to support regenerative, ecologically productive, delightfully beneficial urban growth. The built environment will become increasingly more ecologically productive, harvesting more water, energy, and nutrients than it consumes. The supportive relationships between the landscape structure of the Floriade gardens, the infrastructure of the Floriade district neighborhood, and the everyday life of Almere will uplift the lives and livelihoods of Almere's citizens and create regenerative growth on land reclaimed from the sea.

4. ANTICIPATE CHANGE

To honour the evolution of the city we will incorporate generous flexibility and adaptability in our plans and programs, in order to facilitate unpredictable opportunities for future generations.

Just as nature constantly evolves, our understanding of the right action to take in a given situation shifts as we learn more about the world. Plans and programs are only sustainable if they can adapt over time

to accommodate an unknown future. Incorporating flexibility and adaptability from the outset maximizes the value of time, materials, and energy invested while creating a valuable legacy for this and future generations.

William McDonough + Partners (2008)

A GREEN CITY IS AN ADAPTIVE CITY

The work of progress is always a work in progress.

There may not be another city in the world that understands work-in-progress as well as Almere. As the commentary in *The Almere Principles* noted, the city “is a textbook example of planning for uncertainty,” with an urban design tradition grounded in the values of flexibility, adaptability, timing, and right action. The Floriade vision, anticipating the value of developing an exposition as an integral part of a fast-growing city, is just one example of Almere’s patient consideration of the needs of its future citizens.

It is a civic virtue. In his *Nicomachean Ethics*, Aristotle wrote, “at the right times, about the right things, towards the right people, for the right end, and in the right way, is the intermediate and best condition, and this is proper to virtue.”

Almere’s planning ethos, evident in the Growing Green Cities vision, resonates with Cradle to Cradle’s stance toward the future. Anticipating change within the Cradle to Cradle framework grows out of asking “What’s next?” It is an inherently humble and hopeful question, attentive to the inevitability of change and the limits of knowledge, but focused on evolution, adaptability, and continuous improvement.

Responsive to what’s next, Cradle to Cradle products are designed for disassembly and re-used in generation after generation of high-quality products. Cradle to Cradle buildings, designed to evolve with the changing world, are adaptable to new uses and store valuable materials for the future. Attentive to global change, Cradle to Cradle urban plans are inherently flexible and reversible. At the right time, about the right things, in the right way never forecloses the choices of future generations. Striving for endless resourcefulness reminds us that now is always the time to cultivate a bright future.

The virtues embedded in the Almere Floriade plan and the Growing Green Cities vision will enable Almere to effectively develop an adaptive city district and demonstrate the value of flexibility and timing in a rapidly changing world. Imagining “what’s next,” Almere can adapt as needed, while remaining true to values that will enhance the health of the city and the region for years to come.

5. CONTINUE TO INNOVATE

To advance the city we will encourage improved processes, technologies and infrastructures, and we will support experimentation and the exchange of knowledge.

Solutions to the challenges facing our world today will require new approaches, ones that continuously reexamine our society, our economy and our relationship to the environment. Experimentation and

innovation are essential; by inventing new models that are freely shared we can build ecologies, communities and economies that transcend today's challenges and grow health and abundance for our grandchildren.

William McDonough + Partners (2008)

A GREEN CITY IS AN INTELLIGENT AND CONTINUOUSLY LEARNING CITY

By establishing a planning tradition that maps positive change well in advance of the onset of new challenges, the city of Almere has established an ethic of patient innovation and continuous improvement. Building upon the city's ethos, the Almere Floriade will accelerate and expand innovation, becoming a "Living Lab" that employs intelligent urban systems, integrates technology and landscape infrastructure, and provides a platform for the evolution of design for sustainability and the knowledge economy.

As the Almere Principles are applied to the development the Floriade, each is expressing itself in a set of innovations within its particular urban sphere, and each application, through experimentation and invention, will grow new solutions to the world's urban challenges. The partnership with the horticulture industry, the development of the Floriade site as a city district, the primacy of "feeding the city," the cultivation of circular systems, all integrated in the Growing Green Cities vision, signals a strong commitment to meaningful innovation.

And more. Fresh approaches to city government and public engagement; reliance on renewable energy, healthy materials, and ecological infrastructure; the vision of Almere as a regional hub; global outreach and new modes of knowledge exchange; and the evolution of beneficial, symbiotic relationships with nature show how intelligence, creativity, and innovation animate the Floriade vision and the future of Almere.

6. DESIGN HEALTHY SYSTEMS

To sustain the city we will utilize 'Cradle to Cradle' solutions, recognizing the interdependence, at all scales, of ecological, social and economic health.

We can move towards having only positive impacts by using nature as a model. Cradle to Cradle, a positive regenerative design approach modeled on nature, has three main principles; namely, waste equals food, rely on renewable energy sources, and respect diversity. These simple concepts can have profound effects not only on the health of our community, but that of the region and the world. Renewable energy eliminates the environmental degradation associated with conventional energy production. Recapturing technical nutrients in closed loops eliminates the need for raw material and landfills. Healthy soils, and healthy habitats, are created as the biological wastes are safely composted. These solutions not only have environmental benefits; they are opportunities for new business models, thereby stimulating the economy, and they create a better quality of life for everyone.

William McDonough + Partners (2008)

A GREEN CITY IS A HEALTHY CITY

Healthy urban systems generate multiple sources of value through creative interactions with natural processes. They are hybrids of ecology, technology and civic infrastructure serving as one organism, continuously enhancing the local community, ecosystem and economy. Healthy systems are positively defined, designed to produce more good for more people: More clean energy, more fresh water, more fertile soil, more biodiversity, more productivity, more health and well-being for all.

The Almere Floriade presents an opportunity to design an innovative network of shared systems—renewable energy, water, food and transportation—that establishes a metabolism of viable size and density to serve as urban scale infrastructure. The system supporting the Floriade district will be a living meshwork of soil, gardens, green roofs, vegetated walls, renewable energy systems, land and water habitats, parks, wetlands, greenways, streets, and waterways designed to endlessly circulate clean materials, water, energy, and organic matter in biological and technical cycles.

Significantly, the Floriade plan will create the basic structure and operations of an urban agricultural system, providing fresh local food, stimulating community engagement, and creating restorative interactions between people and nature. Built upon diversely productive urban ecologies, Almere's healthy systems will be the vital foundation of its future growth and an inspiration to Growing Green Cities worldwide.

7. EMPOWER PEOPLE TO MAKE THE CITY

Acknowledging citizens to be the driving force in creating, keeping and sustaining the city, we facilitate possibilities for them to pursue their unique potential, with spirit and dignity.

As stated by the United Nations Environmental Program, "an informed citizenry is the best guarantee of environmental stewardship." The sustainability movement was founded as part of the search for economic and social justice, and even the Bruntland definition of sustainability, "meeting the needs of the present without compromising the ability of future generations to meet their needs," emphasizes social concerns. A sustaining community is one where every person is empowered and engaged in shaping the future. It is only when these needs are met can we achieve true economic, ecological and environmental sustainability.

William McDonough + Partners (2008)

A GREEN CITY IS AN EMPOWERING CITY

The Floriade, and the planned growth of Almere will empower its citizens by cultivating the ecological, social, and economic conditions in which people flourish. For a Green City, supporting human flourishing begins with generously meeting the everyday needs of its citizens, but extends far beyond, encompassing the evolution of freedoms and civic settings that empower people to participate in public life. Creating inclusive settings and diverse opportunities not only supports the civic agency of individuals, but also the well-being of local businesses, institutions and community organizations.

The growing and sharing of knowledge is the rich soil of inclusive city-making. If knowledge is power, circulating knowledge is empowering. As Heraclitus said, “the Logos is common to all.” Praising Heraclitus, the philosopher Lewis Hyde celebrates the legacy of “the commonwealth of knowledge,” the flow of ideas that enlivened eighteenth-century science and democratic thought, enabling “citizens to become public actors, both civic and creative.”

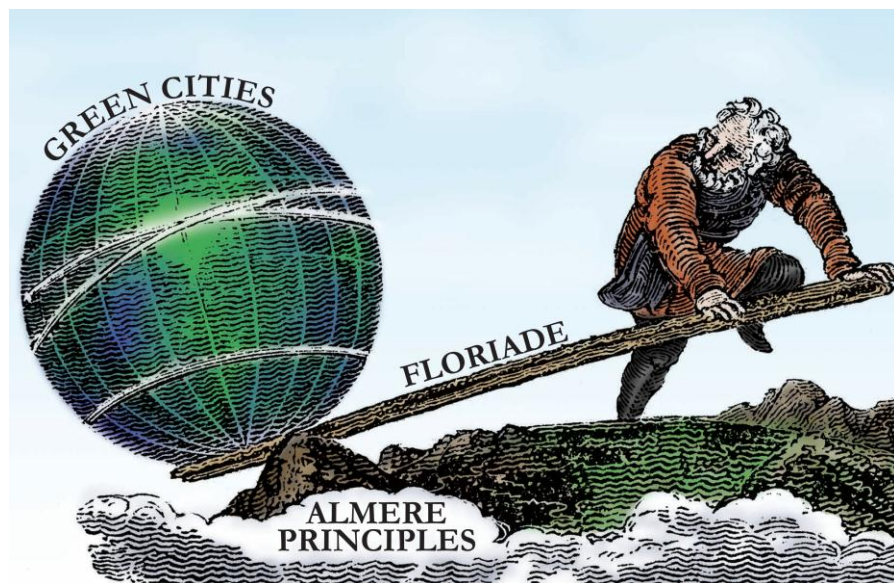
Citizens, Hyde writes, “can only know themselves by way of their civic agency. True citizens are not the audience of their government, nor its consumers; they are its makers.”

Almere is deeply invested in empowering city-makers, evidenced in a variety of meaningful public initiatives, including open platform participation in planning, community-run parks and gardens, and a commitment to making the Floriade site a generator of opportunity and shared knowledge. Equally important will be the living landscape of the Floriade site, which is designed to fundamentally change the way people experience and imagine the possibilities of urban life.

CODA

The translation of the Almere Principles into city-making practices has already set in motion a dynamic process of civic creativity. Indeed, Almere’s deeply considered engagement in the process of positive change is a gift to cities everywhere.

“Give me a lever long enough and a fulcrum on which to place it, and I shall move the world,” Archimedes said. With the Principles as a fulcrum and the Floriade as a lever, the people of Almere can do the same, showing the world how values come alive and become meaningful through the actions of empowered citizens, and how the world becomes better because we are here...



How cultivating diversity stimulates healthy, vibrant communities. How a commonwealth of knowledge can energize creativity, innovation, and regenerative growth. How verdant urban landscapes can support the lives of all creatures while creating delightful places to live, work, and play. How adaptability, flexibility, and resilience are fitting qualities for the designs of our time. How, by seizing the

opportunity presented by the Floriade, Almere has inspired its citizens, created new possibilities for what a city can be, and offered a hopeful vision of urban growth to the world.

Please take these tools and share them. Develop your own fulcrums, levers, and places to stand. Give meaningful form to civic values and cultivate life-enhancing urban growth. Make every city a Growing Green City. Uplift the Earth. Make the world a better place because we are here.

GROWING GREEN CITY STARTING POINTS FOR AREA DEVELOPMENT

For more than forty years, William McDonough + Partners has been deeply engaged in developing the principles and practices of design for sustainability. The evolution of the practice, from architecture to community design to urban planning, has been energized by the creativity and knowledge of an extraordinary group of collaborators from within and outside the firm: architects, urban designers, landscape architects, transportation planners, field ecologists, hydrologists, and engineers, to name a few.

Drawn from this reservoir of shared knowledge, the Growing Green Cities Starting Points articulate an integrated, systems-based approach to urban design and planning that creates healthy, supportive relationships between human communities and natural processes. Designed to celebrate interconnectedness, they lay the foundation for urban ecologies that provide the benefits of productive ecosystems—fresh air, clean water, safe materials, and healthy soil. Recognizing these ecologies as the building blocks of healthy cities, the Starting Points provide a set of tools for giving meaningful form to civic values and cultivating life-enhancing urban growth. By defining the basic conditions of healthy development, they support the values and character of Growing Green Cities, which are:

Diverse

Connected and Sensitive

Nature-Inspired

Adaptive

Intelligent and Continuously Learning

Healthy

Empowering

SITE | Achieve Symbiosis

A healthy built environment encourages supportive, diverse and sustainable relationships between natural and human communities.

Components for this section include, but are not limited to:

Habitat: Site and regional ecosystems are regenerated by creating or restoring healthy water flows, cleansing the air, building healthy soils, increasing biodiversity, protecting night sky and sequestering carbon.

Connection to nature: Meaningful interactions between inhabitants and nature as places are created to enable exploration of our interdependence with the natural world.

Community: Projects support and transform the local and regional community through active economic, social and ecological engagement. This requires a deep and meaningful dialog with clients, neighbors and governments to address the challenges facing communities (as well as their dreams) at all stages of design.

WATER | Maintain a Water Balance

A healthy built environment provides both optimal water performance and discharge water that is as clean as or cleaner than water entering the site.

Components for this section include, but are not limited to:

Water use: Optimal water performance is pursued in order to more quickly reach the goal of exporting clean water to the community.

Water cleansing: Water leaving the site is as clean as, or cleaner, than water entering the site, and nutrients are recaptured, particularly in the form of nitrogen, phosphorous and carbon.

ENERGY | Become a Clean Energy Producer

A healthy built environment utilizes clean, renewable energy in many forms—such as solar, wind, geothermal, gravitational energy, and other energy systems being developed today—in quantities that meet or exceed its needs.

Components for this section include, but are not limited to:

Energy use: Built environments provide optimal energy performance in order to more quickly reach the goal of exporting clean power to the community.

Energy production: Solar, geothermal and gravitational income (including wind, wave, tidal and kinetic energy) meets all energy needs (including mobility) and additional clean power is exported to the grid.

MATERIALS | Everything is a Resource for Something Else

A healthy built environment is constructed of products and uses processes that ensure materials can be returned safely to soil as nutrition or to industry for reuse at the same or higher level of quality.

Components for this section include, but are not limited to:

Material Optimization: Systems are optimized for material use to more quickly reach the goal of using all Cradle to Cradle materials. Preference is given to local and regional sources to encourage the local economy and to Cradle to Cradle® Certified products and manufacturing processes to encourage innovation and continuous improvement.

Nutrient Potential: Materials can be maintained in biological or technical metabolisms, and are designed for easy disassembly to encourage nutrient recapture.

Material Health: Materials used in construction have been studied and optimized for positive and neutral impacts on human and ecological health.

Anticipatory Design: Designs emphasize flexibility and adaptability to allow for changing uses and technologies over time

ENVIRONMENTAL QUALITY | Create Healthy Spaces

A healthy built environment actively supports the well-being of its occupants.

Components for this section include, but are not limited to:

Light + Daylight: Built environments rely on daylight as the primary source of illumination for all occupied areas, and supplement with the highest quality electrical lighting systems with a high degree of user control.

Fresh air + Comfort: Built environments deliver 100 percent fresh, clean air to all occupants and provide a comfortable climate, both with high degrees of user control; filter all intake and

exhaust air to ensure the quality of the air within and exhausting from the building is as high as or higher than the air entering the building.

Views: Environments give all occupants direct lines of sight to the outdoors, as appropriate to use.

Acoustics: Environments achieve ideal sound targets in all areas, at all times, through a combination of policies and design.

Though the Growing Green Cities Starting Points define significant characteristics of sustainable urban design, essential in their own right, they become vital and restorative as elements of an integrated urban system. As tools, their value lies in the intentions of the people wielding them and the reservoir of knowledge and experience that deepens with their use. Ultimately, the ongoing practice of translating the Almere Principles into design practices will include many sets of tools, which will come into play as citizens express their needs and aspirations, and architects, engineers, and designers creatively give form to the shared values of the city. Perpetually evolving, continuously learning and improving, Growing Green Cities are always in a process of becoming, always something lived and something dreamed.