

Sustainable Neighborhood Development 2010

A Toolkit for Understanding US and European Approaches

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Masters in Urban Planning and Policy Design

2008-2010

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This toolkit can be used by a multitude of readers, providing benefits for each when applied to different contexts.

Intended audiences include:

European architecture, engineering or urban planning firms looking for a bit of background into the United States market for sustainable neighborhood development.

Individuals with decision-making responsibilities regarding the urban form, this can be from the direction of the municipality, community organizers, local non-profit organizations, etc.

Students in fields related to urban planning and sustainable neighborhood developments who might benefit from an introduction to the area.

Planners, architects and engineers in the United States who may be considering sustainable neighborhood developments, but aren't well-versed in the current situation.

Those individuals looking to broaden their perspectives on the subject and consider a multitude of approaches.

0 How to Use This Toolkit

As perceived importance of land has skewed attention away from the water-based composition of Earth, so too has the importance of individual buildings overshadowed attention to the urban fabric, that which makes the whole system work. This role/distribution is changing, the future course of action is heavily reliant on the preservation of existing resources and the consideration of buildings alone is not sufficient. A holistic approach, considering aspects of the environment, economy, society and culture on multiple scales, and the expertise of multiple actors, is necessary, and global transitions in thinking from specific to conceptual are beginning to shape many different disciplines.

Moving forward, planners will be required to take on a more extensive role as facilitators, organizing and combining aspects of structure specific energy efficiency measures, environmental management, transportation planning, and public participation, meaning that those in related occupations, architects, engineers, etc., will also need to consider planning strategies.

Sustainable neighborhood development has evolved differently in the United States and Europe; from a top-down approach in Europe to a bottom-up in the US, creating systems with strengths and weaknesses that are quite complementary and provide an opportunity for an advancement of the field through dialogue and coordination.

This toolkit aims to open such a dialogue and provide opportunities for users to consider and reflect upon their own application of the approaches presented. The currently, market-driven system of the United States, shaped by the United States Green Building Councils' Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND®) rating system, will be presented through a series of case studies and the discussion of sustainability evaluation criteria. The European system, influenced by Agenda 21 and marked by a montage of singular approaches, creates an interesting testbed for the socio-cultural aspects of sustainable development. Several independent movements have been identified for potential application to other contexts.

LEED for Neighborhood Development provides an interesting opportunity to catalyze sustainable development in the context of urban regeneration but fails to address some of the key aspects which European projects address more appropriately. Some of the new projects in the United States have started to consider this more holistic approach but are lagging in terms of funding. What kind of dialogue can be formed between European and US interests to bring the advantages of an extended infrastructure to European projects and the inclusion of social aspects to US projects? How can professionals prepare themselves to think about these changing issues?

1 Vantage Point

A vantage point on the existing and past conditions is necessary to create a background for future opportunities. Some key ideas and individuals have had a strong influence on the perception of sustainable neighborhood development in the United States, and it is important to consider this, as it is not the only right way to progress in the field, though it is the direction being taken. This section looks to introduce a brief history of sustainable neighborhood development in the United States, moving from a strong emphasis on green building towards a more comprehensive, though still limited, approach. A timeline is included to place important European events related to sustainable neighborhood development alongside the United States progression to demonstrate the differences and branching of the ideas.

Where are we coming from?

The United States approaches urban sustainability issues with a different perspective than most European countries. Wherein European planners are tasked with adaptive reuse of previously developed, historic sites and a very limited opportunity for entirely new developments, planners in the United States face a temporal, cultural

challenge where new development is valued, space is not limited, and buildings have a short lifespan.

In the United States, urban sustainability issues have been largely shaped by developments in the area of 'green' building, in this case, 'green' most commonly refers to energy efficient design. As an outcome of the first Earth Day in 1970 and the OPEC Oil Crisis of 1973, significant advances were made in the 1970s in the area of building energy efficiency, however, the technology remained elusive to the general population due to cost prohibitions, and attention in the world of environmental issues was turned towards the concept of environmental justice. Environmental design became a buzzword for sociologists, engineers and planners, though it was mainly discussed and not implemented. Planning at the time was driven by the rational planning model, a logical decision making process establishing the interests of relevant parties and pursuing potential alternatives. This model would be slowly replaced by a new model where the planner creates a kind of Utopian scenario and special interest groups are used to further this intent.

Differing from the specific to comprehensive shift of attention that occurred in the US from green building to neighborhood attention, the European approach has transitioned from a systemic-thinking of sustainability on the scale of transportation systems, brought about by Agenda 21, the United Nations program on sustainable development, to a more recent, focused approach on community sustainability through grassroots strategies and municipality backed initiatives. The European and United States approaches are slowly reaching the same scale, but coming from different directions.

Looking to field-wide transitions in the United States, one branch of urban design has evolved from Traditional Neighborhood Design and Transit Oriented Development towards the concept of New Urbanism in the 1990s. This branch has become particularly relevant to the discourse on sustainable neighborhood development as it is the building block upon which sustainable metrics are built.

According to Paul Knox (Metroburbia, 2008), “The tenets and rhetoric of New Urbanism are a derivative melange of ideas and impulses that go back to intellectuals’ utopias of the nineteenth century and that include elements of:

- The City Beautiful movement (which was based on a rather authoritarian and regressive aspiration of creating moral and social order through the arrangement and symbolism of the built environment),
- John Nolen’s insistence of urban design as a way to re-

cover classical civic ideals,

- Patrick Geddes’s idea of a ‘natural region’,
- Clarence Perry’s ‘neighborhood unit’ idea,
- Raymond Unwin and Barry Parker’s assertion of traditional and vernacular design,
- The precedents of the garden suburbs of the late nineteenth century and the master suburbs of 1920s,
- The British Townscape movement,
- Christopher Alexander’s notion of pattern language,
- Kevin Lynch’s concept of legibility,
- and the prescriptions and inclinations of neorationalism, Provincial Urbanism, and contextualism.”

While ‘green’ building has been considered in the United States for many decades, the relatively recent media interest in global warming and sustainability has created a market for methods to validate ‘green’ building in a way that the general public can understand. One of the most interesting products to arise from the United States context is the market driven development of green (sustainable) building criteria.

The United States Green Building Council (USGBC), a non profit organization, created one such rating system for new building construction, LEED® (Leadership in Energy and Environmental Design) in 2000, subsequently followed by criteria for existing buildings, schools, etc.; each version nar-

rowing its focus on a particular building type.

The USGBC has seen success in its sustainability rating systems primarily due to the potential to quantify, according to the criteria, a numerical figure for the sustainability of the building. Architectural firms, developers, and investors have been able to use this figure as a marketing tool to promote their buildings as sustainable, something valued by the current market. The United States government, as well as several universities, have adopted the benchmark as a regulation for new buildings. While there are no direct competitors to LEED® in the United States, there are a number of other systems that address sustainability and have some appeal, though on different scales.

The United States Environmental Protection Agency (EPA) introduced the Energy Star Program, in 1992, to reduce energy consumption and greenhouse gas emissions from powerplants. Since then, the program has expanded to cover products, homes, and buildings. There are resources available for buildings to benchmark energy performance as compared to their peers and the Energy Star label is available for buildings with superior energy performance.

Individual cities have made advances in terms of city-wide approaches to sustainable development. The City of Santa Monica, California, created a Sustainable City Program in 1992 focusing on four goal areas and measuring progress towards those goals through sixteen indicators. Goal areas included Resource Conservation, Transportation, Pollution Prevention & Public Health Protection, and Community &

Economic Development, and were measured by indicators like bus ridership, renewable energy, affordable housing, and environmental education. The Sustainable City Plan has been received well by constituents and continues to be amended to remain relevant to the current context.

On a systematic thinking scale of sustainability, the Natural Step Framework, developed by Swedish scientist Karl-Henrik Robèrt, guides individuals and firms through a multi-step approach to sustainability focusing on an end goal and backcasting to specific actions. A number of architecture firms in the United States have adopted this approach.

Where are we now?

Looking at the last two decades, one of the directions that urban design is moving is towards the concepts of New Urbanism, which can be defined as an approach based on the ideals of urban design prior to the rise of the automobile, meaning that particular attention is paid to streetscape, scale, walkability and a mix of uses, among other aspects. The Congress for New Urbanism (CNU), is a non-profit organization “promoting walkable, mixed-use neighborhood development, sustainable communities, and healthier living conditions”. The organization has based its actions on the principles outlined in the Congress for New Urbanism Charter. The principles cover the region, the neighborhood, and the block, considering such topics as historic preservation, geographic boundaries, mixed-uses, transit

<p>The Natural Step is initiated in Sweden by Karl-Henrik Robèrt</p>	<p>BRE Environmental Assessment Method introduced in the UK</p>	<p>United Nations Conference on Environment and Development signing of Agenda21</p>	<p>Aalborg Charter signed by participants at the European Conference on Sustainable Cities & Towns</p>	<p>Construction begins on Eco-Viikki neighborhood in Helsinki, Finland</p>	<p>Slow City Movement founded in Italy</p>
<p>1989</p>	<p>1990</p>	<p>1992</p>	<p>1994</p>	<p>1998</p>	<p>1999</p>
		<p>1992</p>	<p>1993</p>		
		<p>United States Environmental Protection Agency introduces the Energy Star Program</p>	<p>United States Green Building Council founded by David Gottfried and Rick Fedrizzi</p>		
		<p>The Santa Monica Sustainable City Plan is adopted in Santa Monica, California</p>			
				<p>2000</p>	<p>LEED 2.0 New Construction released</p>

Bo01 constructed in Malmo, Sweden	BedZed constructed in Hackbridge, London, England leading to the One Planet Community Programme	Bristol Accord for Sustainable Communities created by the UK Presidency of the European Union				
2001	2002	2005				
	2003	2005	2007	2009	2010	
	SmartCode Standards released by Duany Plater-Zybeck	Traditional Neighborhood Design (TND) Rating Standards introduced under the United States Environmental Protection Agency's Smart Growth program	LEED for Neighborhood Development Pilot Program released	LEED for Neighborhood Development Rating System released	Secretary of Housing and Urban Development announces that LEED-ND will be used to evaluate HUD grant applications on location efficiency	

corridors, and public and private spaces.

A transect based approach to planning is the latest interpretation of the principles of New Urbanism to be promoted by the CNU. The transect planning model, proposed by Andres Duany, considers a series of zones from rural to urban and integrates both residential and commercial uses, a variation from traditional Euclidean Planning. The transect planning model ties together concepts of new urbanism and smart growth and was interpreted by the Duany Plater-Zybeck Company into SmartCode, released in 2003, the first transect-based codes. Transect-based codes change the approach of zoning away from a use-specific zoning and towards a balanced, mixed-use, evolutionary zoning. As the transects contain transects within themselves, the use of areas can adapt and develop over time in a way that isn't possible with traditional zoning and allows the transect to be applied to multiple scales, from the region to individual streetscapes.

As defined by Duany Plater-Zybeck, there are six official transect zones, ranging from rural to urban, but these zones are not necessarily present in all contexts. One of the key features of transect-based zoning is the ability to omit particular zones based on local character. As of now, the SmartCode is relevant to the United States context but adaptations would need to be made to apply it to other countries because the evolution of cities has been under a different process. Transect-based codes are informed by the physical form of the built and natural environment and thus are form-based codes, something which will be discussed later.

A number of important coalitions have been formed by key players in the fields of environment, planning, architecture and the government in recent years, indicating the awareness for a multi-disciplinary approach to the issues faced today.

Having established a respected name in the architectural context, the United States Green Building Council, in 2009, introduced a rating system to evaluate Neighborhood Development in conjunction with two other key actors in the environmental/planning field: the Congress for New Urbanism (CNU) and the Natural Resources Defense Council (NRDC). The NRDC is a non-profit environmental action organization that approaches sustainable communities based on Smart Growth strategies, which concentrate on the compact growth of urban areas to avoid sprawl, advocating mixed-use communities and transit oriented development.

The LEED-ND rating system demonstrates the interests and principles of the actors involved, the consideration of Smart Growth strategies by the NRDC, transect planning by CNU, and the green building criteria by the USGBC. As the primary metric for sustainable neighborhood development, it will be discussed in depth in the next chapter.

In 2009, the United States Environmental Protection Agency (EPA) joined the Partnership for Sustainable Communities with the U.S. Department of Housing and Urban Development and the U.S. Department of Transportation. The

Partnership for Sustainable Communities aims to “help improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide” through the coordination of investments by the involved parties. The EPA promotes sustainable communities through Smart Growth principles, offering both Smart Growth scorecards and the Traditional Neighborhood Design Rating Standards as resources. The partnership is significant as it is the first time that housing and transportation initiatives by the United States government have been coordinated.

One of the benefits of the partnership is the provision of grant money to local governments, a document entitled “Leveraging the Partnership: DOT, HUD, and EPA Programs for Sustainable Communities” outlines the funding and technical assistance programs available through the three organizations related to the six livability principles put forth by the partnership. These livability principles include:

1. Provide more transportation choices
2. Promote equitable, affordable housing
3. Enhance economic competitiveness
4. Support existing communities
5. Coordinate and leverage federal policies and initiatives
6. Value communities and neighborhoods

The ICLEI-Local Governments for Sustainability – USA (ICLEI), an association of local governments committed

to advancing climate protection and sustainable development, has developed in partnership with the United States Green Building Council and the Center for American Progress, (a non-profit public policy organization), the STAR Community Index benchmarking tool, which identifies aspects of urban sustainability and provides a way for cities to measure progress. The index measures indicators in the areas of environment (natural systems, planning & design, and energy & climate), economy (economic development, employment & workforce training) and society (education, arts & community, children, health & safety, affordability & social equity). Local governments can use the index as a planning tool as well as a marketing device to demonstrate how successful their city is in achieving sustainability measures. ICLEI sees the program with the potential to transform the market.

Much as LEED™ transformed the building industry, STAR will transform the way local governments set priorities and implement policies and practices to improve their sustainability performance. It will become the definitive means by which local governments measure and “certify” their achievements.

The American Society of Landscape Architects has partnered with the United States Botanic Garden and the Lady Bird Johnson Wildflower Center at the University of Texas at Austin to create the Sustainable Sites Initiative, a performance benchmark and guideline program for “sustainable land design, construction and maintenance practices.” The USGBC is also a stakeholder in the

initiative and may include some aspects in future iterations of their rating systems. The initiative considers sites on a variety of scales, from airports and national parks to residential developments and plazas. The guidelines and rating system were released in 2009 and a pilot program has been launched that will complete in 2010. The prerequisites and credits focus on Site Selection, Assessment & Planning, Water, Soil and Vegetation, Materials Selection, Human Health & Well-being, Construction, Operations & Maintenance, and Monitoring & Innovation.

These partnerships represent an important shift in the approach to sustainable development. The interdisciplinary approach is necessary for future innovation in the field and the implementation of these strategies indicates the open-market for advancement.

Where are we going?

A global shift away from prescriptive and deterministic problem solving towards a comprehensive, more conceptual approach is occurring and can be seen across many professional fields. In the field of urban planning, it is manifesting itself in the shift away from traditional zoning practices and towards form-based codes which are being adopted by cities in both the United States and Europe. Form-based codes strategically support the implementation of master plans and the long-term development of the city. If one looks to the fields of medicine, accounting and cooking a similar transition away from specific rules

and towards a comprehensive approach to problem-solving is also occurring. In cooking, the newest guides point to the use of ratios rather than step-by-step recipes. These changes mean that the work of all types of professionals are adjusting to new challenges and adapting to more flexible solutions.

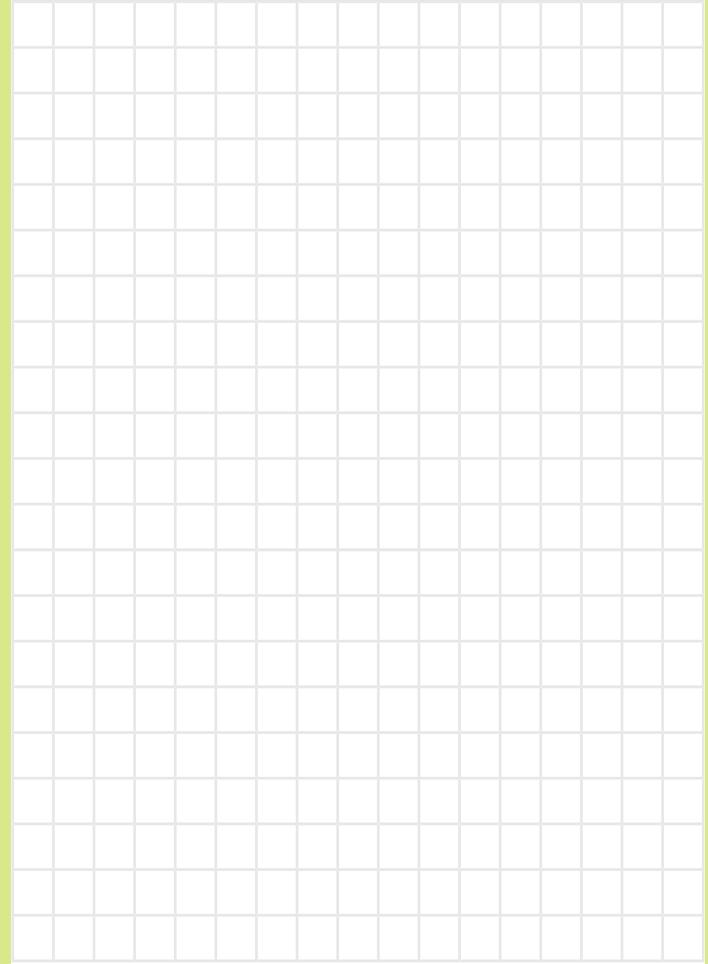
The transition is not yet complete, and assessment tools remain the focus of sustainable development. The partnerships discussed in the previous section have been formed to bring together the knowledge of the parties involved to create new assessment tools. For a concept such as sustainability, which is difficult to define and even more difficult to quantify, there is a driving need to create tangible results though it will remain an elusive goal. It is near impossible to create a tool that would adequately measure all aspects of what one might consider sustainability and thus it leaves the field open for new tools that make the claim.

The focus of new tools though, are moving in the right direction. New advances, such as the Portland Eco-Districts Initiative still consider many of the same quantifiable criteria but have taken an approach that moves it beyond its peers. The network of actors, generally overlooked in other assessment tools, are central, the Portland Sustainability Institute recognizes that community action is vital to the advancement of sustainable development and works to engage neighborhood stakeholders, property developers and the local government.

What's missing is an element of international collaboration, matching the complementary aspects of the European and United States approaches, combining ideas and strategies, and creating opportunities to drive the field in a new direction.

The fact that the two approaches have developed almost exclusively of one another provides an interesting resource as both systems have now been tested and can be evaluated for advantages and disadvantages. Aspects of the European approach may prove to be a missing link in the United States approach, likewise in the other direction. By combining these bodies of knowledge, professionals in the field can approach projects with a perspective that is more adaptable and considers the complexity of sustainable neighborhood developments, and what exactly that might entail.

Why do you think that the European and United States approaches to sustainable urban development evolved along different lines? How might this change the perspective upon which these developments are considered in their respective contexts?

A large grid of graph paper, consisting of 20 columns and 20 rows of small squares, intended for taking notes or drawing.

2 Metric Driving Sustainable Neighborhood Development in the United States

This chapter will look exclusively at the Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND®) program as it currently has no directly comparable competitors in terms of market adoption, application, and potential for influence. As stated before, a number of criteria systems are under development by partnerships but none that have succeeded in garnering mass appeal and none cover all of the aspects covered by LEED-ND. Having multiple metrics to compare would be ideal, as the potential benefits of market driven innovation are significant. The LEED-ND program will be introduced in depth, the concepts discussed, and the opportunities and criticisms will be brought to light.

The United States Green Building Council (USGBC) established itself as the primary accreditation entity in the United States for buildings achieving an above average level of environmental consideration. Buildings can achieve various levels of certification ranging from a basic certified level to consecutively; silver, gold, and platinum levels. Certification levels are determined on a points-based system, developed by the USGBC which considers sustainable site selection, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design. The rating system was established in

2000 and has since been expanded to cover existing buildings, schools, homes, commercial interiors and core and shell developments. Over 12,000 projects have been registered and/or certified, mostly in the United States, but with significant numbers of projects in the Arab Emirates, China, Canada, Brazil, Mexico, Germany and South Korea.

Adoption of the program for buildings looking to achieve recognition as environmentally considerate, has been extensive in the United States due to the format. Project developers are able to analyze and project additional costs for achieving points and strategically make investments in areas that will benefit their project both in terms of environmental design and cost. The certification label is valued by the developer for a variety of reasons; primarily due to its reputation, the label serves as a marketing tool both for the company and the development. Using a scale that is accepted by the public (LEED), the level of commitment to environmental design and energy efficient measures can be compared between developers and developments. It is a tool that can be used by the general public to understand features of sustainable building design that are otherwise difficult to quantify. The points-based system in this respect, has helped the widespread adoption of the program.

Developed by the United States Green Building Council, the Congress for the New Urbanism, and the Natural Resources Defense Council, Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND) encompasses larger scale sites than the existing building-centric LEED rating systems. “Using this tool, municipalities, developers, and prospective residents will be able to objectively determine the degree to which proposed projects embody smart growth principles. For buildings, LEED has demonstrated the value of a clear and enforceable metric in construction practice. Just as some governments are now requiring LEED certification for new buildings, it is expected that LEED-ND will become a municipal standard for controlling the urban design of large-scale development. Given its enormous potential impact, the results must be continuously monitored and the metric updated to minimize unintended consequences.” (Duany, Speck, Lydon 2010)

The LEED-ND program and the existing LEED programs are similar in that both are based upon the ubiquitous use of a points-based system, with projects reaching various levels of certification measured by the points. Previous LEED programs (New Construction, Existing Buildings, Homes, etc) are based upon building specific criteria with little attention to the context. Partnership with the Congress for New Urbanism and the National Resource Defense Council broadened the scope for LEED-ND, which considers Smart Location & Linkage, Neighborhood Pattern & Design, and Green Construction & Technology, heavily influenced by the Smart Growth Principles and the Charter of the Con-

gress for New Urbanism. Due to the lengthy construction and establishment of planned neighborhood developments, the certification process of LEED-ND is also longer than the certification process for single buildings. There is a three-stage certification process, starting with a pre-review, then certification of an approved plan, and then a final certification of a completed neighborhood development.

The United States Green Building Council defines their vision of neighborhoods:

In basic terms, a neighborhood is an area of dwellings, employment, retail, and civic places and their immediate environment that residents and/or employees identify with in terms of social and economic attitudes, lifestyles, and institutions. By itself the neighborhood is a village, but combined with other neighborhoods it becomes a town or a city. Similarly, several neighborhoods with their centers at transit stops can constitute a transit corridor. The neighborhood, as laid out in LEED-ND, is in contrast to sprawl development patterns, which create pod-like clusters that are disconnected from surrounding areas.

The metrics of a neighborhood vary in density, population, mix of uses, and dwelling types and by regional customs, economies, climates, and site conditions. In general, they include size, identifiable centers and edges, connectedness with the surroundings, walkable streets, and sites for civic uses and social interaction. A neighborhood should have places where the public

feels welcome and encouraged to congregate, recognizable as the heart of the community. A proper center has at least one outdoor public space for this purpose, designed with pedestrians in mind; this is the most well-defined outdoor “room” in the neighborhood. The best centers are within walking distance of the primarily residential areas, and typically some gradient in density is discernible from center to edge.

The morphology of a sustainable neighborhood—the design of its blocks, streets, and buildings—can serve as the foundation of a walkable environment. Walkable streets have many features, and those elements deemed most important by the core committee are encouraged by the LEED-ND Rating System. These features, such as human scaled buildings and street widths, wide sidewalks, buildings that are pulled up to the sidewalk to create a continuous street wall, retail storefronts and other uses, and interesting street furniture and trees, are meant to create a safe, inviting, and well-used public realm with visual interest.

In conclusion, LEED® for Neighborhood Development emphasizes the creation of compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities. In addition to neighborhood morphology, pedestrian scale, and mix of uses, the rating system also emphasizes the location of the neighborhood and the performance of the infrastructure and buildings within it... Together, well-located and well-designed green neighborhood developments will play an integral role in reducing greenhouse gas emissions and improving quality of life.

(USGBC LEED-ND®2009 Rating System)

LEED for Neighborhood Development

LEED-ND is broken down into the three categories of Smart Location & Linkage (SLL), Neighborhood Pattern & Design (NPD), and Green Infrastructure & Buildings (GIB), plus additional points for Innovation & Design Process and Regional Priority credits.

Smart Location & Linkage is characterized by five prerequisites and nine additional credits – the prerequisites include Smart Location, Imperiled Species and Ecological Communities, Wetland and Water Body Conservation, Agricultural Land Conservation, and Floodplain Avoidance. The credits in this category are generally based on smart growth design principles, focusing on site selection. Emphasis within the credits is placed on Preferred Locations and Locations with Reduced Automobile Dependence.

Neighborhood Pattern and Design is highly influenced by New Urbanist principles, with the credits of Walkable Streets, Mixed-Income Diverse Communities, and Compact Development being given the highest point allotment and also being prerequisites for the category.

Green Construction and Technology is the last standard LEED-ND category. The prerequisites in this category are a Certified Green Building, Minimum Building Energy Efficiency, Minimum Building Water Efficiency and Construction Activity Pollution Prevention. Credits in this category most closely align with the other LEED programs, empha-

sizing especially, Certified Green Buildings, Stormwater Management, and On-site Renewable Energy Sources.

LEED® for Neighborhood Development	
Total Possible Points**	110*
 Smart Location & Linkage	27
 Neighborhood Pattern & Design	44
 Green Infrastructure & Buildings	29
<i>* Out of a possible 100 points + 10 bonus points</i>	
<i>** Certified 40+ points, Silver 50+ points, Gold 60+ points, Platinum 80+ points</i>	
 Innovation & Design Process	6
 Regional Priority Credit	4

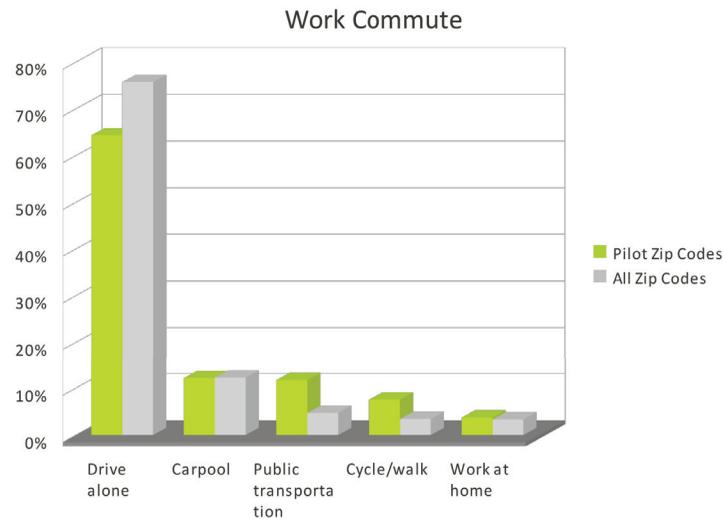
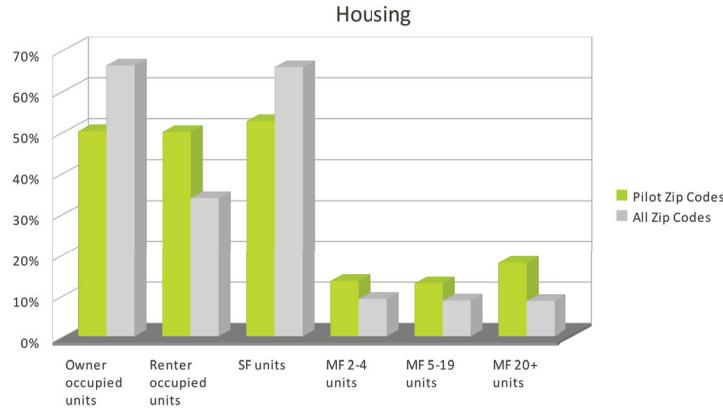
Additional points can be achieved for both **Innovation & Design Process** and **Regional Priority Credits**. Innovation & Design points are awarded to projects implementing a sustainable practice that doesn't fall under the three primary categories, for example, one point of I&D is designated for the inclusion of a LEED Accredited Professional on the project design team. The Regional Priority Credits are defined by regional committees to place emphasis on particular credits falling under the three primary categories that are particularly relevant to that region. A project will get additional points for choosing to implement a credit that has been selected for regional importance in the project area. Regional priority credits do not apply to prerequisites.

Launched in 2007, as a pilot program with 238 projects registered, the LEED-ND program was officially offered in April 2009. Several of the pilot projects are nearing completion, though most have not yet received certification. During the two year pilot stage, the program was evaluated by project participants, representatives from the Congress for New Urbanism, the United States Green Building Council, and the National Resource Defense Council, as well as by an open public review bringing significant changes to the original proposal.

One of the main criticisms of the pilot program was the lack of consideration for local context; a project in the desert of Arizona fell under the same rules as one along the Great Lakes in the Midwest though they faced significantly different environmental contexts, both in terms of climate and geography. A significant amendment to the program was made prior to the official launch which integrated the regionalization of credits. In this amendment, a number of additional points were selected by a small group of experts from the designated regions as especially relevant to those areas.

Over 90% of LEED-ND pilot projects are located within dense urban and suburban neighborhoods. In many cases, the pilot project densities are significantly higher than the average density within the census tract. Statistics regarding pilot projects can be found in the appendix.

Pilot Project Sample Statistics



Criticisms and Challenges

Criticism of the LEED-ND program spans multiple scales and involves concepts ranging from the technical issues with the credits, focus on new development, and universal application of criteria, to the New Urbanist approach to urban design. The discussion of challenges will start with the micro scale and move to the macro scale, illustrating the ties between scales and arriving at the level of planning theory and the base for the issues being faced using a sustainability evaluation criteria.

LEED-ND Specific Criticisms

The pilot program provided an opportunity to vet the framework in the context of project applications. The City of Seattle and the Cascadia Green Building Council held a regional summit to discuss the program findings of the pilot project participants and policy makers within the Northwest Region (Washington, Oregon, and British Columbia) in May of 2008. Those participants represented 22 of the 229 pilot projects accepted in the United States and Canada. The projects represented range in size from 1 acre to 470 acres, and a number of projects were presented as case studies, including Hoyt Yards in Portland, Oregon, which will be discussed further. Participants in the regional summit discussed the challenges of implementing the LEED for Neighborhood Development program as a standard.

Relevance in Urban Context

Projects located in dense urban neighborhoods that consist of a single building, partial block or block have an advantage over larger stand-alone projects in that they can achieve rating without much effort. The location and access to public transportation are the main areas of benefit and given the emphasis on these areas, where the advantage is located. The problem with this advantage is that innovation will not be inspired if a project can succeed in an existing context.

Defining Neighborhood Characteristics and Boundaries

The LEED-ND program doesn't define the size of neighborhoods. This can create such issues as larger projects experiencing the difficulty in achieving some credits while smaller projects may not adequately represent the idea of a neighborhood.

Measuring Existing Conditions in Redevelopment

Some of the criteria require the collection and analysis of data, this can be difficult on projects that are a redevelopment or infill as the project may not be owned by one individual. The coordination and incentivization for owners to participate may require extra resources.

Documentation Cost

Certification cost can be a limitation for some projects. In a study done by Criterion Planners, it was estimated that

projects may spend as much as 400 hours documenting performance in addition to the certification fee. The integrated design process, requiring more coordination between project actors can also add costs.

The Relevance in Urban Context and Definition of Neighborhood Characteristics and Boundaries are both related to the physical form of the development. One of the arguments presented is the ability for projects that may not encompass the idea of a "neighborhood" to receive recognition as such. For example, the Eliot Tower project in Portland, Oregon, is a single structure spanning one city block, and falls under the LEED-ND program due to the mixed-use functions, transportation access, etc. One might note however, that if this building were not located within an urban context where other amenities are present, it would certainly not be considered a neighborhood. A survey of the residents in the area would also be likely to show that it is not recognized as an individual neighborhood but rather as one node of a larger neighborhood.

Measuring Existing Conditions in Redevelopment and Documentation Costs are both implementation criticisms. The LEED-ND program is a market-tool, it costs money to apply for certification and most projects are funded by a private developer. The coordination of multiple stakeholders, and especially those who may not see the benefit of such a certification can prove difficult and impede the process in some cases. The high documentation costs, while arguably positive in a cost-benefit analysis, can also dissuade some

projects from pursuing LEED-ND certification, something which could make a difference in sustainable decision making on a project.

Beyond these challenges, the suggestions and opportunities for LEED-ND were also discussed at the summit in Seattle and a number of key action items were identified in both the urban and greenfield contexts.

In terms of urban redevelopment, the potential partnerships between local governments and private sector developers through capital investment, the identification of a moderator to remove developmental barriers, public/private partnerships, and the education of community members were identified as positive advantages to the program. In the context of greenfield development, participants indicated that smaller municipalities might be able to leverage LEED-ND to require sustainable development and improve the neighborhood design of new developments.

Set a minimum and maximum project size.

Participants were concerned about the definition of project size because of the impact of criteria on different scales. The suggestion is to define what is considered a neighborhood and use those parameters to define projects eligible for LEED-ND certification.

Consider regional conditions.

During the pilot program, the enrollment of projects in varying climatic conditions brought about concerns regarding the ubiquitous application of criteria to projects in very different contexts. A regional consideration that acknowledges differing conditions was proposed as the solution to this issue.

Require a balanced distribution of credits across the three categories.

Some projects, due to context, may find an advantage in one category over the others, making it easy to achieve LEED-ND certification with little additional effort. However, in order to fulfill the idea of the sustainable neighborhood development, it is necessary to achieve a more holistic acquisition of points, the solution being to require a distribution of credits across all the categories. The nature of the pilot projects demonstrated that there are two distinct projects types, urban redevelopment sites in an existing high-density urban fabric, and greenfield or suburban/rural sites. These two contexts face different issues and should be considered differently.

Recognize local or regional residential green building programs in the credit for certified green buildings.

The credit in Green Construction and Technology requires the inclusion of one certified green building on the project, but at this point, the green building must be certified with the LEED certification criteria. There are a number of com-

munity developed residential green building programs, such as Seattle's Built Green™ program, which have the advantage of being regionally appropriate, but these programs are not recognized.

(Cascadia Green Building Council, City of Seattle 2008)

These opportunities for improvement and challenges to the LEED-ND pilot program were taken into consideration and a number of aspects were integrated into the full version. Most significantly, in 2009, a regionalization task force was formed to determine the prescribed credits upon which to add a weighted value based on the regional priorities outlined by the task forces. The national United States Green Building Council appointed a Regionalization Task Force who oversaw regional volunteer groups made up of local experts to determine the weighting of regionalization credits for every zip code in the United States.

The regionalization credits count for four additional points for projects and differ based on the location of the project. The significance of this amendment is that it allows for the regional context to be considered, something that was seen as lacking in the pilot program. There are still some difficulties with the system, as the credits are determined by zip code and there are situations where the environmental or social contexts within that zip code differ dramatically. While it is a step in the right direction, it fails to account for discussions of local context, that urban fabric which immediately surrounds the new development.

Criticisms of New Urbanism

Going beyond the program specific details of LEED-ND and considering the program from a more universal perspective, criticisms can be placed regarding the narrow New Urbanist approach to sustainable development. Though New Urbanism has brought place, livability and quality of life back into the urban argument. The projects all tend to have a similar morphology due to the prescriptive measures and technical specifications and much criticism of LEED-ND can be traced back to direct criticism of New Urbanism.

The physical configuration of streets is key to New Urbanism, as is the role of building mass as a definer of urban space, the need for clear patterns among elements of built form and public spaces, and the importance of having identifiable, functionally integrated quarters. The belief is that civic architecture, pedestrian-oriented streets, and a traditional vocabulary of urban design (with a morphology that includes boulevards, perimeter blocks, plazas, and monuments) can act as a catalysts of sociability and community. This is to be achieved, according to the Congress for the New Urbanism, through a sort of painting-by-numbers for urban designers: detailed prescriptive codes and conventions, embedded in a series of regulatory documents - a Regulating Plan, Urban Regulations, Architectural Regulations, Street Types, and Landscape Regulations provide the template for New Urbanist developments. (Knox and Mayer, 2009)

This neotraditional design has been described as “cultural reductiveness” and faces the criticisms of sociologists like Richard Sennett who describes them as “...exercises in withdrawal from a complex world, deploying self-consciously traditional architecture that bespeaks a mythic communal coherence and shared identity in the past.” (Sennett 1997)

One of the criticisms of New Urbanism, and that which is the primary challenge to LEED-ND, is the attention to spatial form over social process. The image of place and the built form intentionally mimics the traditional village, though this model does not necessarily invoke the same cultural values. The prescriptive nature of New Urbanism creates an environment of black and white; that which falls under New Urbanism and that which doesn't. As community and civility are difficult to measure, New Urbanist measures are primarily morphological, implying that these aspects follow suit when a “good” urban design is present.

In an article written for the Harvard Design Magazine in 1997 entitled “New Urbanism and the Communitarian Trap”, David Harvey, a professor of geography, writes that

Most of the projects that have materialized, furthermore, are “greenfield” developments largely for the affluent and appear more directed to making the suburb “a better place to live” (Philip Langdon, A Better Place to Live: Reshaping the American Suburb, 1994) than to revitalizing decaying urban cores. And it is not clear even to Vincent Scully, a skeptical ally of the movement, that

the rich are really choosing “community” rather than “the image” of community (“The Architecture of Community” in Katz, The New Urbanism).The connection between spatial form and social process is here made through a relation between architectural design and a certain ideology of community. The New Urbanism assembles much of its rhetorical and political power through a nostalgic appeal to “community” as a panacea for our social and economic as well as our urban ills.

Critics like Wortham-Galvin (2008), argue that these places are places of fiction, or even hyper-reality, simulating reality in a “perfect” image, breaking the imperceptible barrier between reality and fiction. The approach of New Urbanism that restricts the existence of tensions and conflicts in place-making, limits the opportunity for interaction and exchange between the people and the place.

This discourse, regarding morphology and New Urbanism, carries over into the consideration of programs like LEED-ND, which has a strong basis in concepts of New Urbanism.

Criterion in LEED-ND focus primarily on morphological measures: Smart Location & Linkage with the prerequisite of smart location and the majority of credits being placed on preferred locations and locations with reduced automobile dependence; Neighborhood Pattern & Design with the prerequisites of walkable streets, compact development, and connected and open community and by a significant number of credits focused on walkable streets, compact development, and mixed-use neighborhood centers; and

finally, Green Infrastructure & Buildings by the physical entities constructed on the site. The combination of criteria result in projects that closely resemble one another. Please see the appendix for an example of the walkable streets prerequisite that achieves this intent with very specific physical guidelines for the project.

Investigating further the form of these projects, there are two main types: one is the single block mixed-use structure, integrated into an urban context, but hard to consider a 'neighborhood'; and the other, closely resembling something like a suburban development, generally constructed in post industrial site or on the periphery of an existing urban context and following a common form. The single block structure, morphologically works well with its context, clearly responding to the surrounding environment but lacking in the 'neighborhood element', those characteristics which give a civic identity to an area.

The 'suburban development' morphologically is detached from the surrounding street patterns and characteristically doesn't match in terms of building typology. The LEED® for Neighborhood Development program creates islands of development, internally focused morphologically, their relationship with the context being through a certain minimum number of road intersections however most still retain strong edges. Several documents imply that LEED-ND should be seen as a catalyst for change in the city, thus accepting the idea that they shouldn't necessarily be coherent with the surrounding.

Morphology can be considered in terms of the scale as related to the surrounding neighborhoods, the public space on-site and in the immediate surrounding, and the street pattern, graphical examples will follow on the next pages.

Scale

The scale of buildings in LEED-ND projects is generally larger than the suburban context into which they are built which creates a perceivable barrier, isolating the development from its surrounding and limiting integration.

Green Space

While LEED-ND projects often provide green space, it is difficult to assess whether this green space can be understood as public. Due to the aesthetic and morphological differences of the project from its context, the green space could be perceived as a non-public entity.

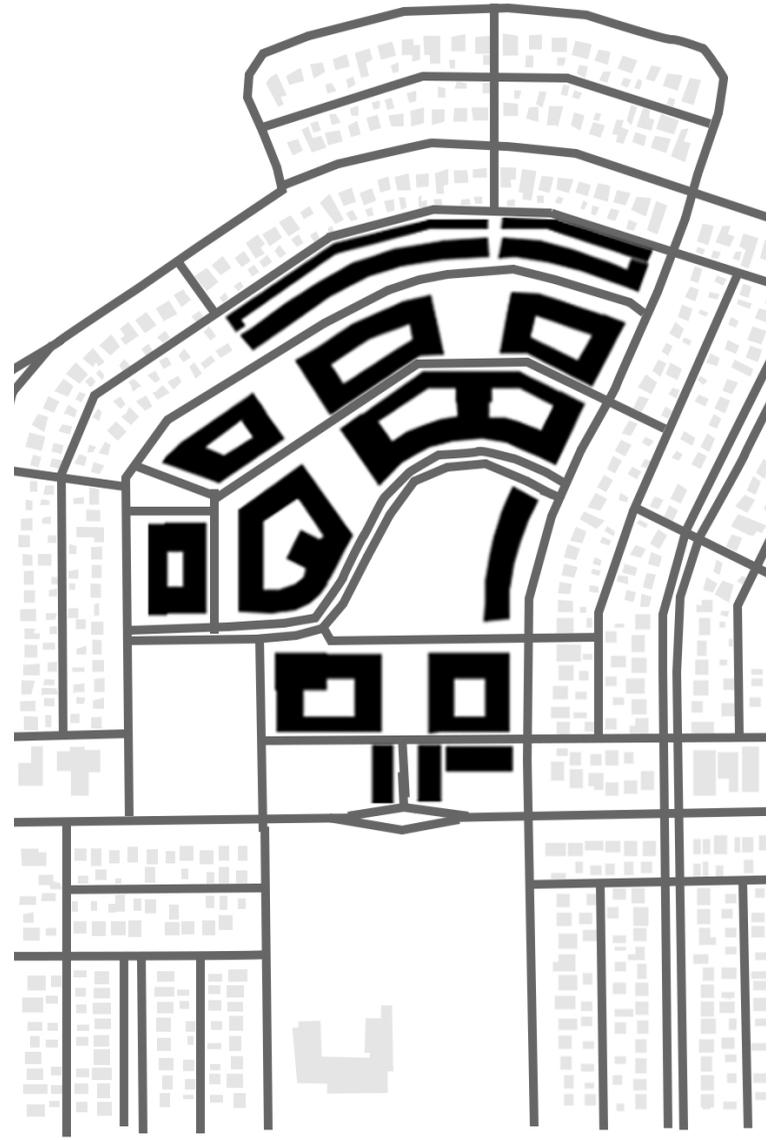
Street Pattern

Observing the street patterns of the LEED-ND projects, one can see that a large number of them are bounded by highways. The smart location prerequisite considers street linkages, but proximity of the projects to suburbs generally means the continuation of suburban streets, lacking connection to primary thoroughfares, or when that connection is present, hooking onto the main thoroughfare but not connecting well with the surrounding.

Scale

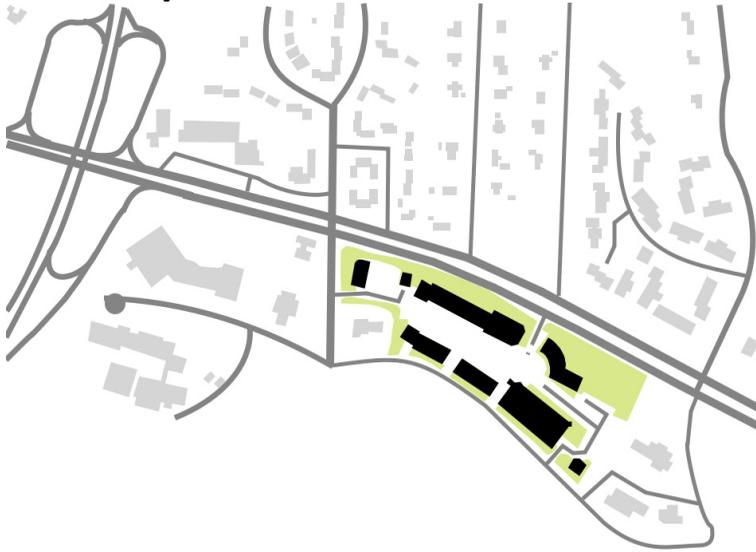


Crystal City, LEED-ND Stage 1, Arlington, Virginia, USA



Strathearn Heights, LEED-ND Silver Stage 2, Edmonton, Alberta, CAN

Green Space



East 54, LEED-ND Gold Stage 2, Chapel Hill, North Carolina, USA



Southworks Lakeside, LEED-ND Pilot Stage 1, Chicago, Illinois, USA



Flats East Bank Project, LEED-ND Stage 1, Cleveland, Ohio, USA



Hoyt Yards, LEED-ND Platinum, Portland, Oregon, USA

Street Pattern



Helensview Heights, LEED-ND Gold Stage 2, Portland, Oregon, USA



Hercules Bayfront, LEED-ND Gold Stage 1, Hercules, California, USA



Tassafaronga Village, LEED-ND Gold, Oakland, California, USA



Reston Heights, LEED-ND Silver, Reston, Virginia, USA

Advantages

Leveraging/Marketing

While there are quite a few criticisms of the LEED-ND program, the advantages are equally significant. As the LEED-ND program is market driven, local governments have the opportunity to influence new development in a way that was only previously possible with zoning and permitting.

Local governments can prepare themselves for the implementation of LEED-ND developments and shape the future growth of a city by considering a number of aspects related to the program. The Criterion Planners firm has published a report entitled “Green Zones: What parts of my community are eligible for LEED-ND? - A guide for city and country planners” to aid and assist local governments in thinking about project eligibility. The guide directs the thinking of the planners towards the identification of areas for redevelopment and creation of long term supplies of eligible areas by considering the available land supply.

Using computer tools like GIS, the planners can move through the LEED-ND criteria to determine things like vacant parcels, redevelopable parcels, infill opportunities, and transportation connections to create a map of land parcels that meet the eligibility criteria. This kind of study would have to be completed also by the developer to un-

derstand if their project would meet the criteria, so by performing this action, the local governments are putting themselves a step ahead.

Taking the information found by the study, local governments can prioritize the eligible parcels according to the city plans. Development in certain areas can be spurred by the dispersal of information and developers looking to invest can select pre-screened areas. If the city is looking to develop particular areas, and those areas do not fall under the eligible parcels, the code can be reviewed to make any necessary adjustments. Long term adjustments can come in the form of rezoning, closing infill gaps and relocating public transportation lines.

The USGBC has also produced a document entitled “A Local Government Guide to LEED for Neighborhood Development”, which focuses on ways that local governments can use LEED-ND to achieve sustainability goals. Four approaches are suggested with strategies at different levels along with the inclusion of examples of application by different city governments.

Lead by Example

Suggestions range from setting goals in the form of a policy statement, to determining eligible land parcels, to issuing a request for proposal.

Remove Barriers and Pave the Way

Strategies to remove barriers and pave the way entail the revision of zoning codes, adoption of a climate action plan, and writing or revising a green building ordinance.

The Case for Incentives

Financial and development incentives are outlined with specific strategies such as tax credits, expedited review/permitting process, and density bonuses being discussed in further detail.

Technical Assistance and Education

Local governments can achieve technical assistance and education by things like appointing a staff member familiar with green development projects as a point of contact for developers considering pursuing a project.

Cities have begun to take these opportunities into consideration and then utilize them for further development. The City of Cleveland, Ohio utilized the opportunity of three LEED-ND pilot projects to create a set of green design guidelines, determined by the city, project representatives and the Cleveland Foundation, to act as an overlay for the projects as they seek variances when the LEED-ND criteria conflict with current regulation. The guidelines are currently under review and if adopted, would apply to future developments as well. The green design guidelines will be discussed in the Next Generation Strategies chapter.

Beyond the local government level, the national government has become involved with LEED-ND through the Department of Housing and Urban Development (HUD), which provides \$3.25 billion dollars in grant money to local governments and will use LEED-ND to score grant applications on location efficiency. This is significant because along with the formations of the Office of Sustainable Housing and Communities, it is the first time that the federal government has used criteria like location efficiency to evaluate grant proposals.

Infrastructural/Network

While the USGBC's LEED certification programs have their limitations, they represent an important infrastructure linking green building development throughout the United States. The organizational structure of the USGBC, a hierarchy broken down into continental regions, metro/citywide chapters, committees, and even student groups create a network of highly qualified professionals, and is a mechanism for cross disciplinary communication. Best practices by firms working on the cutting-edge of sustainable development, as are many of those in Portland, Oregon, are communicated through the nationwide organization, in the form of case studies and workshops, which in turn, are delivered by local chapters. Members of the United States Green Building Council also have access to the educational materials in its resource library, ranging from research reports to podcasts and a speaker's registry. Resources are

also available for green educators through the USGBC and its education provider which offer courses that satisfy the requirement of credentialing maintenance for its members that are LEED accredited. This network of information helps to move the industry forward and mainstream new cutting edge technologies. The sharing of strategies also encourages the cutting-edge firms to push the boundary further, to set themselves apart.

This is the case with an entire chapter of the USGBC. The Cascadia Green Building Council, representing Oregon, Washington, British Columbia, and Alaska, which had a market in which the standards of LEED building certification quickly become adopted, and the expertise of local professionals used, meant that achieving even LEED certification for a building became the norm and professionals were driven to innovate.

The Cascadia Green Building Council has founded a non-profit organization, the International Living Building Institute which promotes a program called the “Living Building Challenge”, an advanced green building rating system beyond the criteria of the LEED rating system. What sets it apart is the fact that all aspects of the program are mandatory, projects cannot select which to fulfill, they must fulfill all aspects, but the guidelines encompass more than those included in the LEED rating systems and also include less quantifiable aspects, such as equity and beauty.

The Cascadia Region continues to set an example for other areas of the country and moving forward, programs like the Living Building Challenge will help to advance the industry as a whole.

Another existing network within the USGBC is that of the Emerging Green Builder program, created for individuals entering relevant fields as an organizational tool for those interested in sustainable building practices. The program exists both on the local and national levels, with a national program that promotes relevant policy decisions and at the local level, Emerging Green Builder committees exist under local USGBC chapters. Local committees promote networking and educational opportunities and also coordinate volunteer efforts. Emerging Green Builders may participate in competitions, lead peer workshops, and network with full-member professionals, often creating opportunities that may not otherwise be available to young professionals.

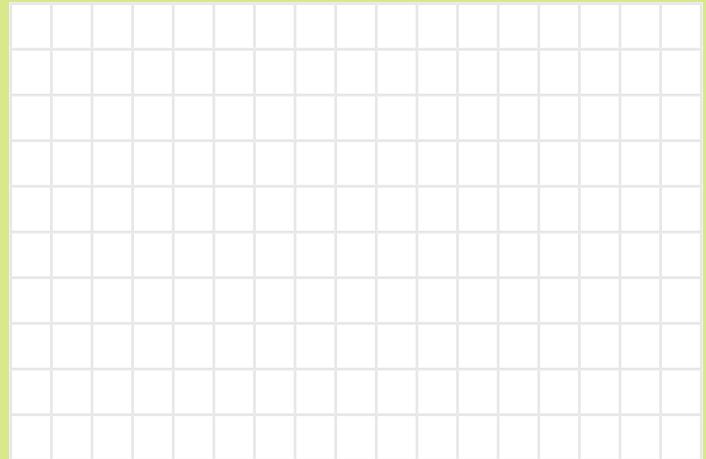
Conclusions

What can be gathered from the information presented in this section is that significant market advantages can be realized through using a points-based system like the LEED-ND program. These market advantages drive innovation and can lead to widespread adoption of sustainable practices. The use of a point-based system can draw critique by those who view it as an over-simplification of a complex issue, but it offers the ability to quantify and provide a scale.

What significance does the morphological form have on the success of a new development?

A large grid area for writing the answer to the first question. The grid consists of 20 columns and 15 rows of small squares, providing a structured space for handwritten text.

What are other ways in which LEED-ND criteria or the process of meeting the criteria might be applied? In the context of local governments?

A large grid area for writing the answer to the second question. The grid consists of 20 columns and 15 rows of small squares, providing a structured space for handwritten text.

2a United States Case Studies

This section will introduce and discuss four case studies of projects following the LEED for Neighborhood Development program in various stages of certification. The projects are distributed across the United States, one is in Cleveland, Ohio, another in Chicago, Illinois, and two more are located in Portland, Oregon. The projects represent a cross section of LEED-ND projects as they vary greatly in size, from 4 acres to 1150 acres, as well as in scale. Similarities between projects also exist, public-private partnership methods of funding were prominent in all projects, and innovative techniques for accruing financing are highlighted on some projects.

All four projects are located on urban infill sites, though the contexts differ greatly. The magnitude of the Chicago project, at 1150 acres and over 13000 residential units means that it will interact differently with its context than the other, smaller projects. One might assume that a smaller project would be easier to integrate into an existing neighborhood, but looking at the situation of the 4 acre project in Portland, Oregon, it can be understood that integration with the surrounding is based on many more factors than size.

Certification levels differ between the projects, all are pursuing LEED-ND but striving for different levels and reaching different levels of success. From the best scenario example of the Hoyt Yards project in Portland, Oregon, which is on track to achieve the highest certification level, to the hyper extended timeline of the Chicago project, which will be completed over twenty-five years, to the premature construction stop of the Helensview Heights project in Portland, Oregon.

Considering these projects from the perspective of context into which they are being integrated, funding sources, and any other special considerations, will be useful in translating opportunities that these projects represent.



Downtown business district shown in center, site marked with a black outline



Site marked with a black outline

Flats East Bank Project Cleveland, Ohio, USA



Size: 24 acres (9.7 ha); 600 residential units

Site: previously developed

Certifications: LEED-ND Stage 1 Certification

Developer: The Wolstein Group, Fairmount Properties

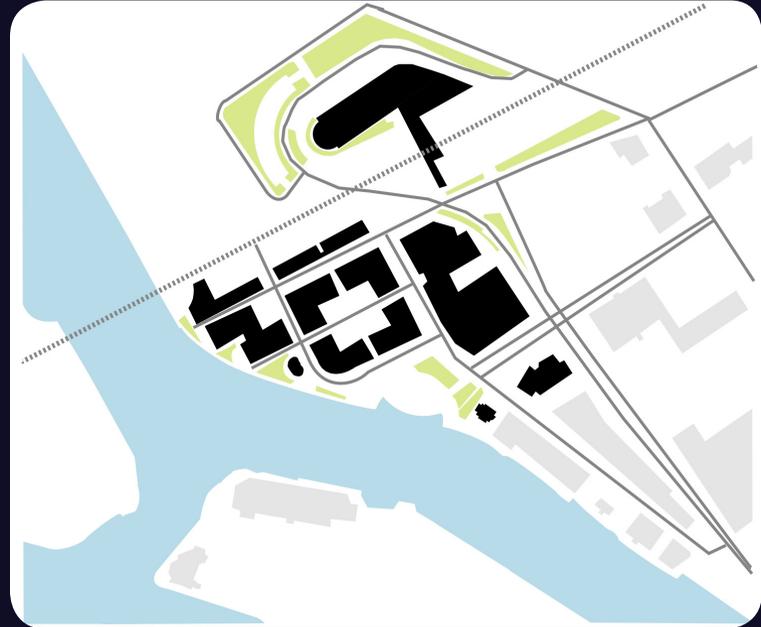
Architect: Forum architects, NBBJ, Eppstein-Uhen, RTKL, Dimit Architects

The project uses innovative funding approaches integrating tax-exempt bonds, Federal Housing and Urban Development money, and private investment to pursue development despite economic conditions in the City of Cleveland.

Once a part of the steel manufacturing center of the United States, Cleveland, Ohio, is now a part of the 'Rust Belt', an area that includes cities that were all once primary steel manufacturers, but whose factories are now abandoned and derelict due to outsourcing in the 1970s and a restructuring of the steel industry. Many cities in the 'Rust Belt' haven't recovered and face the problem of shrinking cities leaving an uninhabited downtown district which creates the environment for social issues.

Population in Cleveland has shrunk from a high of roughly 900,000 in 1950 (in 1930 it was the 5th largest city in the United States) to less than 500,000 in 2000 (making it the 40th largest city in the United States). The population loss was due to suburbanization, job-loss due to the de-industrialization, decline of neighborhoods and white flight in the 1970s. (Keating 2007) The situation in the United States of shrinking cities is different from that of Europe because the population in the United States continues to grow. Another difference is that American cities like Cleveland started with a lower population density than most European cities, making the population exodus particularly perceptible.

The job loss faced by the cities in the 1970s were a primary reason for the population loss, and continuing economic difficulties in the city prolong the problems. Solving the economic problem is an integral part of making significant changes in the city.



The Flats District, a lively entertainment district in the 1980s, saw significant decline in the 1990s and in recent years most establishments had closed down. Wolstein Development, a private developer, and Fairmount Properties have proposed a project, the Flats East Bank, to revive the district and bring 600 new residential units to the downtown.

The Flats East Bank project is a mixed use project, providing additional office space, residential and retail uses. The additional office space will help to keep more than 1200 employees in downtown Cleveland that oth-

erwise would have been relocated to areas outside the city. Two large firms will anchor the office buildings securing the presence of employment in the area. Additional retail will support the site users, providing amenities that are not offered in the downtown.

The most interesting aspect of the project was the funding approach. Suspended a number of times due to financial issues, the project has secured roughly 300 million dollars from private investment and 100 million from public funds, including ten different government sources. (Paull 2008) This makes it the project is a result of the largest public-private partnership in decades.

Of the private investments, 20 million are coming from foreign investment and a little known immigration program that offers green card visas to foreign investors that make an investment of at least \$500,000 that contributes to the creation of at least 10 jobs.

Additionally, a partnership with the Cleveland City Schools to restructure the allocation of an increased property tax to be invested in public-private endeavors.

Flats East Bank - Cleveland, Ohio, USA

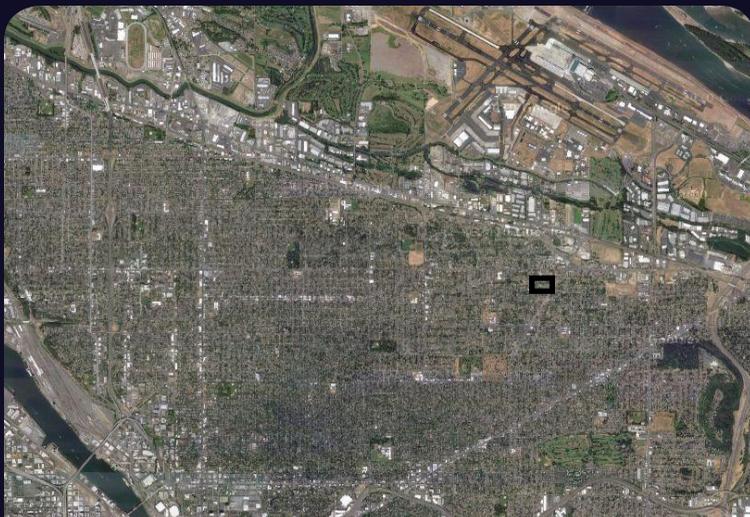
LESSONS LEARNED

Project developers saw value in achieving LEED-ND certification for marketing value and a way to attract additional investors.

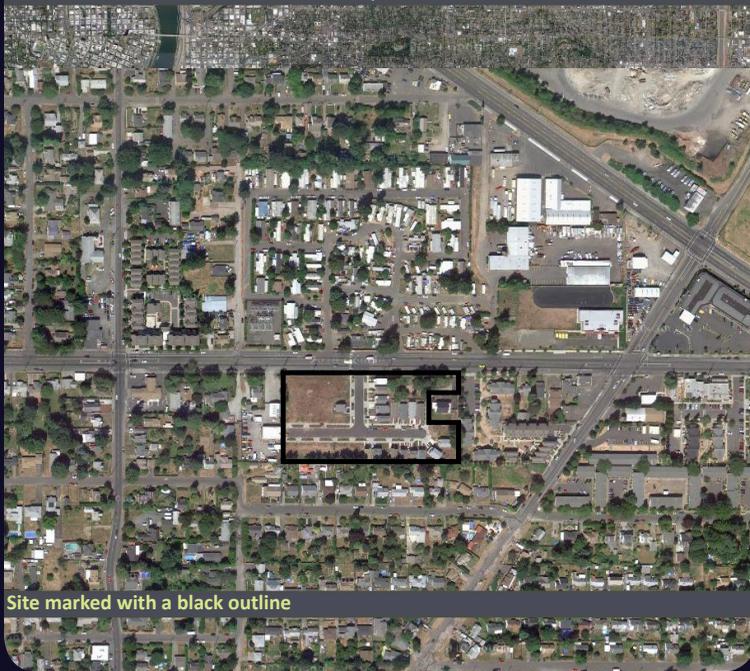
An innovative funding approach was used, integrating multiple sources of private and public money.

The project will revitalize an area of the city that is quite derelict, bringing jobs and housing. Due to its positioning and the car-oriented nature of the city, the project will be a sort of island, making it difficult to assess whether it will be able to activate more development and a neighborhood mentality in the area.

Sustainability measures related to energy and the environment are barely mentioned in press related to the project, giving the impression that the LEED-ND certification is indeed being used primarily for marketing value.



Downtown business district shown at left, site marked with a black outline



Site marked with a black outline

Helensview Heights Portland, Oregon, USA



Size: 3.96 acres (1.6 ha); 52 residential units

Site: previously developed

Density: 21.3 dwelling units/acre

Certifications: LEED-ND Stage 2 Gold

Developer: HOST Development, Portland

Architect: Peck Smiley Ettlin, Portland

The site consists of 40 new homes and 12 flat stacked condominiums, all designed for LEED-Homes Certification. 100% of the housing meets affordability standards and 100% of stormwater is managed on-site.

As a pilot project for the United States Green Building Councils' LEED for Neighborhood Development Certification, Helensview Heights has received its certification but will not complete the second and third phases of development due to financial issues and the closing of operations of its developer, HOST (Home Ownership a Street at a Time) Development, an affordable housing nonprofit organization. The developer, HOST, was committed to the construction of affordable housing and transitioned from receiving certification through Earth Advantage to completing projects under the LEED for Neighborhood Development criteria.

With a twenty year history in Portland, HOST Development was able to renovate and sell more than 400 affordable homes. Most recently, it was involved in a program called Building Blocks which aimed at constructing 1000 new single family homes by 2017 to help attract new students to the Portland Public School District which faces declining enrollment.

Helensview Heights was one of the first LEED-ND projects to construct 100% of the housing at a level of affordability determined by the federal government.

The additional costs of LEED certification can be limiting to projects of this type, but as a pilot project, it received financial aid for registration fees. HOST Development employed a cost-benefit analysis on the different levels



of LEED-ND certification for their projects, determining that for Helensview Heights, LEED Silver was attainable without adding too much overhead cost to the project, as the project has moved through the certification stages, the level of Gold became feasible.

In addition to being within the federal median family income range, the project has made use of Energy Star appliances thereby further reducing the operations and maintenance costs of the future owners. Initially, LEED-ND was considered following a grant by the Enterprise Community Foundation's Green Communities program

for an eco-charrette (an intensive workshop involving the architects, engineers, stakeholders and representatives of the municipality to consider the feasibility of incorporating additional technologies to improve efficiency/environmental design and meet LEED-ND criteria). The charrette showed that only minor adjustments were needed and the results would be lower maintenance costs and marketing benefits.

The economic recession in 2007 had dire effects on HOST's operations, in the next three years, the nonprofit faced financial difficulties and cost-cutting, the end result being that the operation had to close and the rest of the Helensview Heights development sold to another developer.

Helensview Heights - Portland, Oregon, USA

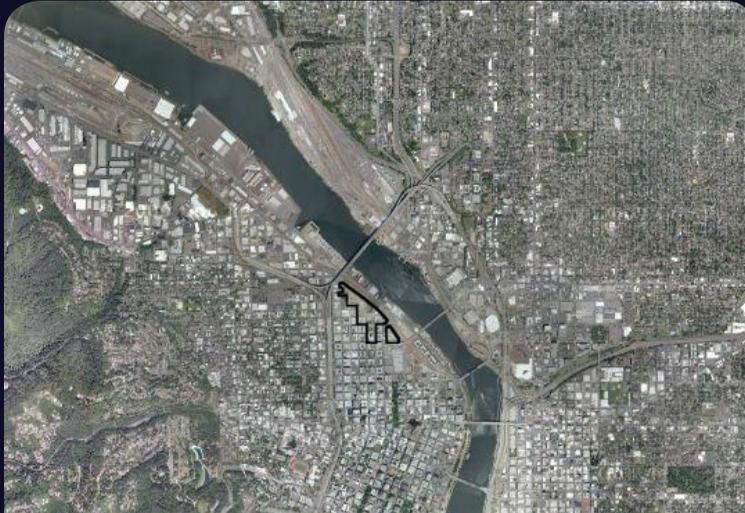
LESSONS LEARNED

LEED-ND certification helped to push this project beyond a conscientious affordable housing project to one that was able to implement a number of new technologies, thus allowing the project to achieve a 90% reclaim of on-site stormwater.

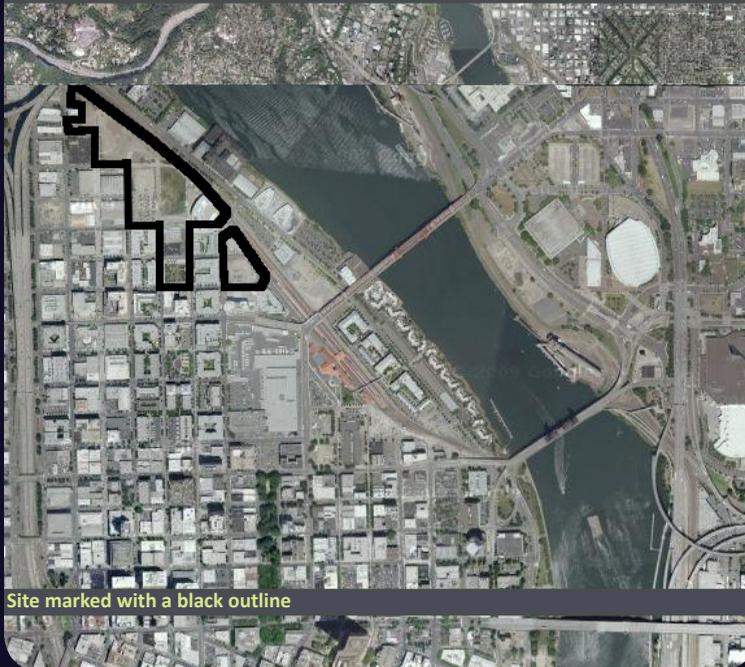
Project developers saw value in achieving LEED-ND certification for marketing value and as a way to attract additional investors.

Projects meeting affordability levels require multiple funding sources due to the tentative nature of project financing.

While the project was innovative in its approach by utilizing funding from grants and private investments to achieve an affordable housing development, the economic recession proved to be an unsurmountable hurdle for the project, which was left incomplete.



Downtown business district shown in center, site marked with a black outline



Site marked with a black outline

Hoyt Yards

Portland, Oregon, USA



Size: 34 acres (13.7 ha); 2500 residential units

Density: 73.5 dwelling units/acre

Certifications: LEED-ND Stage 2 Platinum

Developer: Hoyt Street Properties

Architect: BOORA Architects

One of only seven LEED-ND projects in the United States to receive LEED-ND Platinum, Hoyt Yards is an infill neighborhood located on former rail yards along the Willamette River. The project has a stormwater system designed to collect and clean 90% of the site's rainwater for re-use.

Portland, Oregon is known for its planning strategies and innovative approaches to architecture and urban issues. Having one of the first urban growth boundaries in a major United States city, Portland has managed to control its growth and remains denser than most other comparable size cities. A compact, walkable downtown and an efficient public transportation system make for a pedestrian friendly city and help to alleviate some of the congestion issues faced by other cities.

Mayor Sam Adams, elected in 2008, has made sustainable innovation a primary goal for Portland. This is being achieved through a number of strategies, one being the open-data initiative, which means that the city makes civic information open to the public and available on the city's website. The attitude towards Portland's global role is an important difference, when asked in a recent interview about the necessity to view Portland with a global mindset, the mayor responded *"You have to be a city of the world. I spend a lot more time traveling than the previous mayor because part of my job is to sell the Portland brand. Otherwise, companies in China or Japan might say, Why would I hire an architecture or engineering firm from Portland, Oregon? Part of my job is to be a salesman. We have a natural strength in Portland around sustainability and clean technology, and it's my job to help commercialize our local laboratory and export it around the world. As for sustainability, there's still vestiges of the old days when people thought of sustainability as an economic caricature. Here in Portland,*



we've shown that it isn't a stark choice between prosperity or sustainability. We're a city that tries to live our values: the triple-bottom line of social, economic, environmental justice." (Mayor Sam Adams, Fast Company)

The Portland Pearl District has undergone significant changes in the last two decades, changing from a der-

elicit industrial neighborhood full of warehouses to a renewed lively neighborhood in the center of the city, whose primary criticism is a lack of population diversity. This is being addressed by the City of Portland through a policy ordinance that designated urban renewal areas within the city, and requires a thirty percent allocation of the future tax revenues towards affordable housing. Most successful has been the Pearl District which has more than 3000 affordable housing units, integrated in well designed and maintained buildings. These buildings are managed by a few key non-profits, Central City Concern, Reach Community Development, and Turtle Island Development LLC. Many residents of the area are unaware of the presence of affordable housing in the neighborhood meaning that the integration is successful.

Hoyt Yards, a project by Hoyt Properties, aims to renew the remaining vacant quadrant of the area between the new high rise, the railway and the Willamette River. The project, a 30 block renovation, will create approximately 2500 new residential units. The transition of the area has been successful thus far, with city ordinances adapting to the changing use of the area. The area borders the railway and thus requires some adjustment to requirements for rail traffic. Hoyt Yards has achieved a LEED-ND Platinum certification for its commitment to sustainability.

Hoyt Yards - Portland, Oregon, USA

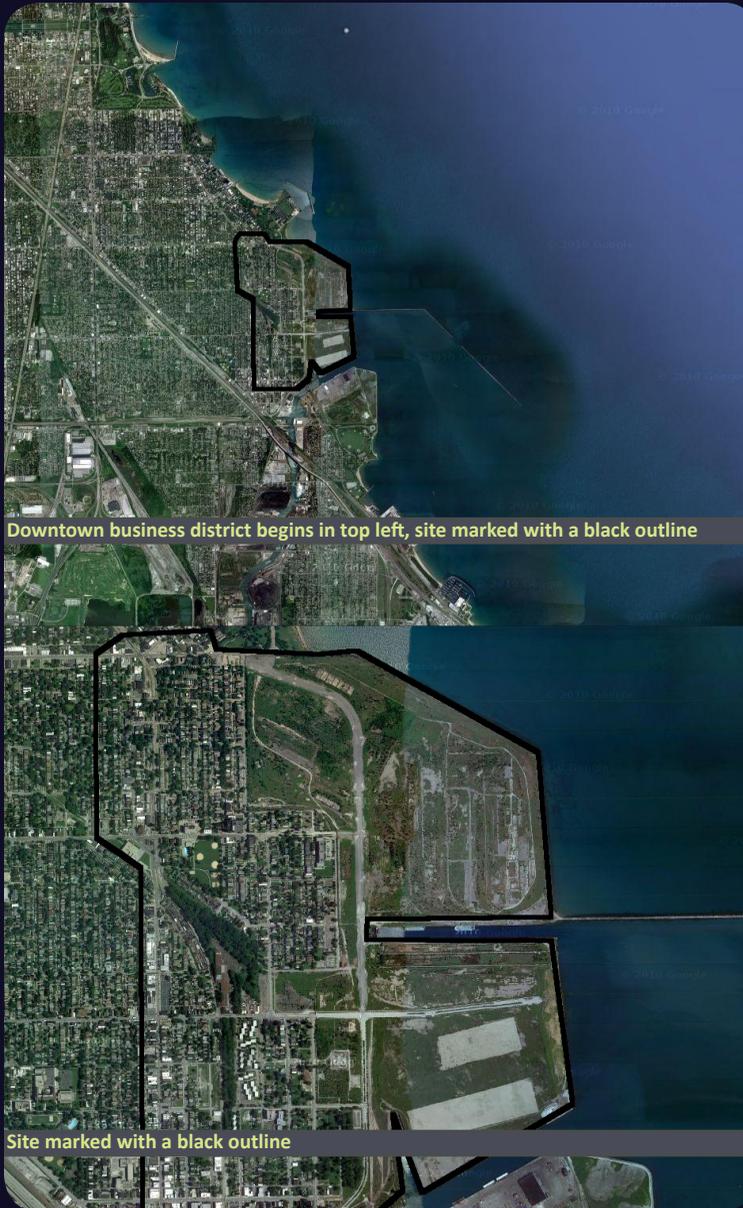
LESSONS LEARNED

A citywide commitment to sustainability has significant impacts on the design and implementation of projects, thereby influencing the market to innovate to remain competitive.

Cities that support green technologies through grants, tax breaks, etc., attract new firms and create an industry that can maintain the local economy.

Constructing a LEED-ND project in the context of an entire area revitalization, as is the case with Hoyt Yards, located within the Pearl District area, where significant transformations have occurred over the last decade, means that the new development will be able to utilize existing resources, provide new ones, and successfully integrate with the context.

Policies by cities can support economically heterogeneous neighborhoods by requiring developers to allot a percentage of new construction as affordable housing.



Southworks Lakeside Development Chicago, Illinois, USA



Size: 1150 acres (465 ha); 13575 residential units

Site: former site of US Steel plant

Certifications: LEED-ND Stage 1 Certified

Developer: City of Chicago, McCaffery Interests

Master Plan: Sasaki Associates, Inc., Skidmore, Owings & Merrill, LLP

Constructed on a huge industrial site, and one of the largest pilot projects in the LEED-ND program, this project utilized innovative solutions for remediation and is following a twenty five year master plan for its development.

In 2007, the Governor of Illinois signed “The Green Neighborhood Grant Act”, which made Illinois the first state to incentivize LEED for Neighborhood Development. The Act designates up to 1.5% of development costs to be funded by the Department of Commerce and Economic Opportunity for up to three neighborhoods per year. Neighborhood developments must achieve the LEED-ND certification to receive the funding. This bill has helped to develop a number of LEED-ND projects in the State, including the largest pilot project in the United States, the Southworks Lakeside Development.

Chicago has faced some of the same urban issues as other ‘Rust Belt’ cities: the former US Steel plant has been closed since the 1980s and the enormous site has remained vacant, leaving an urban eyesore on the already disadvantaged South Side. The City of Chicago has the land-rights to the site and has created a long range plan to recover the site overseen by the Office of Community Development.

The City has combined the plant site with some of the surroundings to create a 1140 acre site for the project. The project includes over 13000 residential units and represents an area almost equal in size to the ‘Loop’, the primary business district of the downtown. As a previous industrial plant, the site faces environmental issues as acres of slag, a by-product of the steel industry have made the land infertile.



With statewide coordination, the City was able to solve the issue and save money, the city of Peoria, Illinois needed to have the Illinois River dredged, and so the sediment removed in Peoria was shipped to Chicago to form a topsoil layer on the site solving the problems of both the City of Peoria and the City of Chicago and saving money overall for the State of Illinois.

A project of this magnitude raises questions, and one of the concerns is regarding the demographics of the south side. LEED-ND projects tend to be oriented towards middle/upper-middle class residents, and this project is no different, however the South Side of Chicago has historically been a lower/lower-middle class area. The project extends beyond the boundaries of the US Steel plant boundaries and requires the renovation and demolition of some of the adjacent neighborhoods. There is a potential for urban rifts in areas on the fringe of the project site, placing a large economic disparity between areas and igniting tension in an area already known for these types of issues.

The plan, which will be implemented in phases over 25 years, aims to function as a long-range plan of the area, guiding new development and serving as a basis for the transition of the blighted south side of Chicago. The new site will provide a large quantity of public land, lakefront access, new bike trails, and a significant expansion of public transportation to the area.

Public-Private partnerships are also being used to finance this project, with Tax Incremental Financing (TIF), a public financing tool that uses future tax revenue for current investment, being applied to the redevelopment for the construction of infrastructure (streets, sewer lines, etc.).

Southworks Lakeside Development - Chicago, Illinois, USA

LESSONS LEARNED

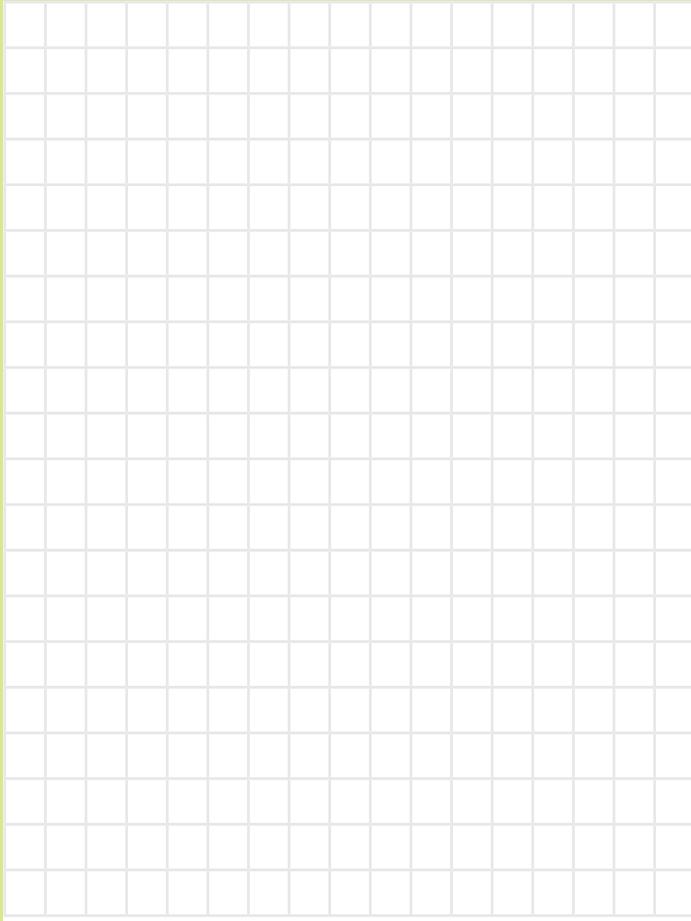
LEED-ND certification has been leveraged to redevelop a huge infill site. Attraction of investors and the possibility to use the process to shape a long term plan for the site were motivations for the City of Chicago to pursue certification.

The 'Green Neighborhood Grant Act' implemented in the State of Illinois, which allocated funding for neighborhoods achieving LEED-ND certification is a way in which public funding has been tied to the program in order to influence developers to develop sustainable neighborhoods.

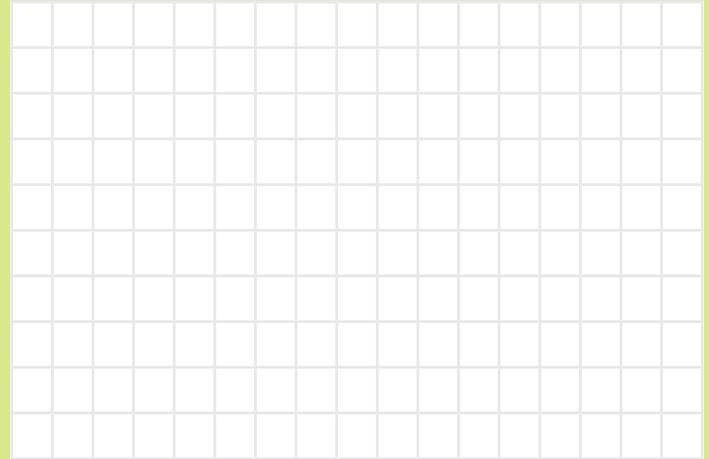
Issues regarding social equity are largely unaddressed, moving forward in the twenty-five year plan, the integration with the neighborhood will need to be considered and adjustments may be required.

Spend a few minutes answering these questions. Then think about how you might take action on your answers.

What are the key attributes outlined by the United States case studies presented in this chapter?



Which strategies might be applied to projects in other contexts?



Note two ideas you'd like to incorporate the next time you develop a project .



3

European Sustainable Neighborhood Advances

Europe's progress towards sustainable neighborhood development has been marked by supranational initiatives like Agenda 21 and a series of independent advancements within different countries spanning different levels of influence from nationwide policy to community organization and individual project development.

The impacts of Agenda 21 on the advancement of sustainable practices in Europe have been extensive. Agenda 21 is a program supported by the United Nations that lays out guidelines for global, national and local organizations to pursue strategies that reduce greenhouse gas emissions, improve social and economic status, strengthen roles of certain populations, and proposes tools for implementation. The program, which was drafted in 1992 in conjunction with the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, was signed by 178 governmental organizations. The significance of the adoption of Agenda 21 was the recognition that action needed to be taken in many disciplines to approach the issues of sustainability.

The Aalborg Charter, an agreement in 1994 by European cities and towns to produce a Local Agenda 21 by the year

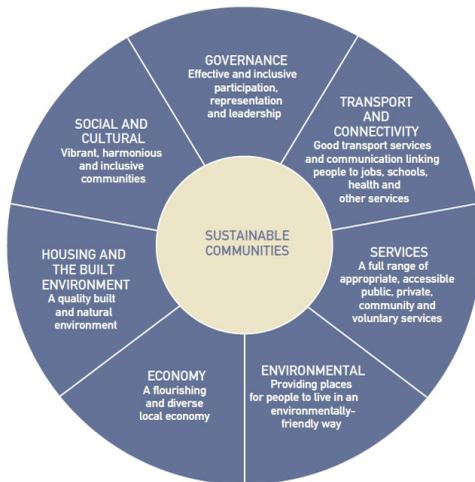
1996, addressed the idea of a local action plan for the issues presented in the Agenda 21 program. It stated that local action plans should recognize existing plans, systematically identify urban problems through public participation, prioritize those problems, create a vision of sustainable community involving various sectors of the population, establish a long-term action plan including measureable targets and program the implementation and monitoring of that action plan.

The importance of the Aalborg Charter is the localization of attention to sustainability and the emphasis on community involvement as a necessary attribute to the successful implementation of a long-term sustainability action plan. It is important to note, however, that the plan focuses on systemic approaches to sustainability, not yet considering a neighborhood or localized intervention scale.

The "Bristol Accord" created out of an informal meeting by the United Kingdom Presidency of the European Union in 2005 to discuss the benefits of creating sustainable communities across Europe, outlines eight characteristics of a sustainable community and asks ministers to commit to share good practices case studies. This represents the first

European Union wide approach to a community scale consideration of sustainability.

The United Kingdom has been active in regards to policies, having launched a Sustainable Communities Plan that outlined what sustainable communities should entail. In 2004, a report was published to detail out the skills needed to deliver the aims of the Sustainable Communities Plan. This report, entitled “The Egan Review: Skills for Sustainable Communities”, defines a common understanding for the term “sustainable communities” and recommends strategies for local governments to achieve the skills proposed in the report. It is interesting to note that the components of a sustainable community are broken down into seven categories: Governance, Transport and Connectivity, Services, Environmental, Economy, Housing and the Built Environment, and Social and Cultural.



Cittaslow

The Cittaslow (SlowCity) movement of Italy, an evolution of the SlowFood movement and in keeping with the Slow philosophy, has created a network of small towns that promote local, traditional culture, and liveability. The movement started in 1999 when a number of small town mayors created a partnership that committed itself to the fostering of principles ranging from environment to culture to economic development. Following the meeting of mayors, an official Charter was procured, emphasizing primarily issues related to hospitality and local food.

More relevant to the issues discussed here is the attention paid to local distinctiveness and sense of place. These aspects include the conservation of distinctive built form, the improvement of public transportation, and the commitment to environmental management in accordance with the ISO 14000 standards.

In order to become a member city of the SlowCity movement, cities must use a trained individual to prepare an initial report on the status of the city in relation to the SlowCity principles. A detailed audit must follow, covering environmental policies and planning, use of infrastructure, integration of technology, promotion of local produce and ways of life, hospitality and rhythm of life, and sense of place, this audit is then vetted by the elected assembly.

The SlowCity movement could be perceived as something that looks backward, trying to preserve a form of community that no longer exists, and creating isolationist societies, but an important aspect of the cities involved are their commitment to bringing local events that attract visitors and the integration of technology.

As an alternative approach to urban planning, the SlowCity movement fulfills a number of sustainability criteria that are unmatched by other approaches, addressing economic, environmental, social and cultural issues.

An important question to ask is whether cities that enter into the SlowCity movement are already qualified under the principles or if they are making significant changes in order to meet the criteria. The discussion being that if the cities that have entered the movement are already qualified, it in fact is redundant, these cities would have continued in the same manner regardless and under the movement, face new external pressures from the increase in tourism and external economy. One should also note that a study of the economic prosperity of the SlowCities would be interesting, based on the criteria, it might be surmised that those cities involved in the movement are comparatively better off than their contemporaries.

In a study completed by H. Mayer and P. Knox, two SlowCities were studied to determine the levels of involvement. Results showed that citizen engagement was lacking de-

spite a widespread support by political, economic and environmental organizations. They also found that SlowCities were governed by individuals willing to bridge different motivational interests. The four year time line of the certification means that cities must continue to update and amend agendas.

Specific Project Applications

Considering the scale of individual project development, northern European countries lead the way in terms of sustainable neighborhood developments, largely with energy efficient strategies. On the following pages, case studies for the Bo01 in Malmö, Sweden, Viikki in Helsinki, Finland, BedZED in Sutton, UK, and Ørestad in Copenhagen, Denmark will be briefly presented to discuss the attributes of each that might be interpretable in other contexts. Readers are invited to look further into projects that may be especially relevant to their work.

A view of what is considered sustainable neighborhood development and how it has been achieved thus far can be garnered by the investigation into these projects as well as some of the other projects developed but not visited in this toolkit, including: Vauban-Freiburg-Germany, Kronsberg-Hannover-Germany, Hammarby-Stockholm-Sweden, and Millenium Village-London-England.

Bo01 - Malmö, Sweden



Size: 61.8 acres (25 ha); 1000 residential units

Site: Brownfield - Previous Industrial Harbor

Price: starting at ~ SEK 2 million, ~ 218000 Euro

**Project Team: MKB Fastighets AB, Malmö, Sweden,
Lars Birve, Ingvar Carlsson**

**Developer: SWECO Projektledning AB Architects:
Moore Ruble Yudell Architects & Planners; FFNS Arki-
tektekter AB**

The Bo01 project is a portion of the larger Västra Hamnen plan, finished in 2001, to act as a demonstration area for the international housing exhibition. The Municipality of Malmö has focused on the harbor area, a previous industrial port area, for redevelopment and has worked to integrate public and private interests in the long-term planning of the area. The Municipality aimed to make the area a diverse, heterogeneous area by holding competitions for the residential buildings, inviting a variety of architects to develop individual styles.

Housing ownership was foreseen as the way to create a diverse mix of residents, and much attention was paid to integrating different ownership models, however, the result has been a homogeneous group of residents. It is home to wealthy, white residents despite the population of Malmö being almost 40% immigrants. The lack of diversity is due to the high prices of the homes, which are almost twice the national average price.

The project is well known for its energy efficiency measures, aiming to provide all of the district's energy with on-site energy production. Wind turbines, solar panels, thermal heating and integration with Malmö's existing district heating system provide the energy needed. Organic waste is also collected to be converted into natural gas in the city's natural gas plant.

An aerial photograph of a city, likely Copenhagen, showing a dense urban grid, a large body of water (the harbor), and a prominent new development area (Bo01) situated on a peninsula. The image is used as a background for the text overlay.

LESSONS LEARNED

Variety in housing type and the inclusion of multiple architects can help to create a heterogeneous area, eliminating some of the morphological island effect.

Disparity between income levels of the population and the median housing prices on the new site meant that despite city efforts to attract a diverse population, the residents of the Bo01 project generally fall under one socio-economic category.

Citywide systems, such as district heating, can provide infrastructure for new projects while also benefiting the city as a whole. Energy efficiency measures that extend beyond the site can provide services to the existing context.

Ørestad - Copenhagen, Denmark



Size: 764.5 acres (309 ha); 8000 residential units

Site: previously undeveloped

Developer: Ørestad Development Corporation

Master Plan: Finnish APRT and Danish KHR Arkitekter

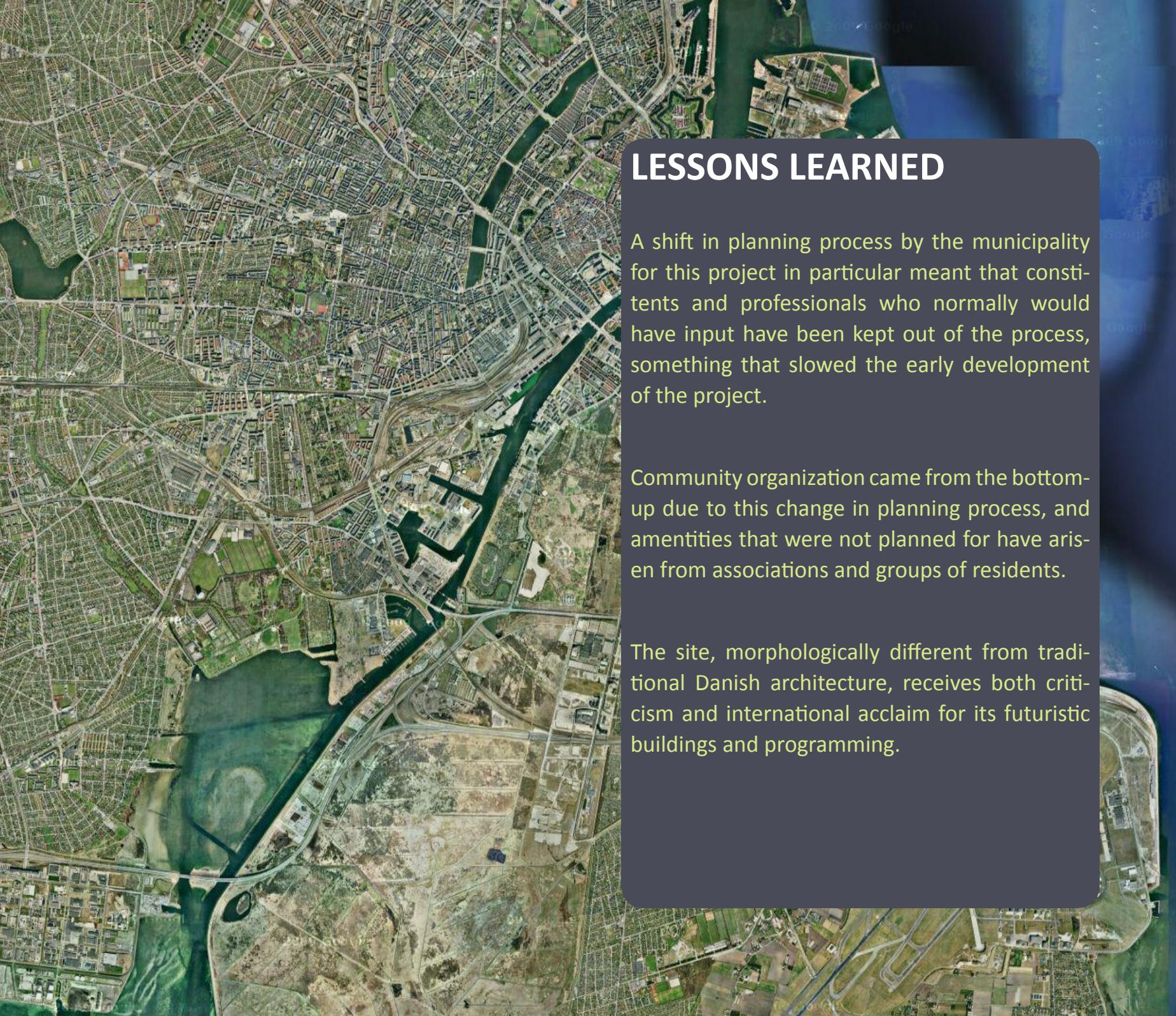
The Ørestad project is a development of a large parcel of land on the island of Amager closely linked with the City of Copenhagen. The site is well located and in 1992 the city passed legislation to develop a new city district.

Well served by public transportation with intercity trains and the Copenhagen metro both connecting to it, the district is broken down into four areas: Ørestad North,

Amager Faellled, Ørestad City, and Ørestad South. The areas are being developed on different timelines and with different plans though the Ørestad Development Corporation is overseeing the master plan for the area which will take twenty years to complete.

The project faced criticism by constituents and Danish architects for a perceived disregard to the Danish context and an Urban Development Plan (UDP) that reorganized the traditional structure of participatory planning in Denmark. (Moulaert, Rodriguez, and Swyngedouw 2003) Social polarization between the community and the developers were a problem in the early stages of project development.

Interesting community opportunities have arisen from local associations that recognize the importance of livability in new areas of the city. Ørestad Urban Gardens is an association that encourages residents to do small-scale farming on the many vacant building sites located in Ørestad, providing a forum for social interaction and the opportunity to improve the green areas of the site. Additionally, an active homeowners association in the most developed area, Ørestad City, has influenced city-sponsored solutions on the site. Coordination between the association and the city led to the planting of a hundred established trees from other parts of the city that were marked for removal to satisfy the desire for trees in park areas of Ørestad City.

An aerial photograph of a city, likely Copenhagen, showing a dense urban grid, a river (the Øresund Canal), and a large green area (the Ørestad district). The image is used as a background for the text.

LESSONS LEARNED

A shift in planning process by the municipality for this project in particular meant that constituents and professionals who normally would have input have been kept out of the process, something that slowed the early development of the project.

Community organization came from the bottom-up due to this change in planning process, and amenities that were not planned for have arisen from associations and groups of residents.

The site, morphologically different from traditional Danish architecture, receives both criticism and international acclaim for its futuristic buildings and programming.

Eco-Viikki - Helsinki, Finland



Size: 57 acres (23 ha)

Site: new development on greenfield

Developer: City of Helsinki, Ministry of the Environment and the Finnish Association of Architects (SAFA)

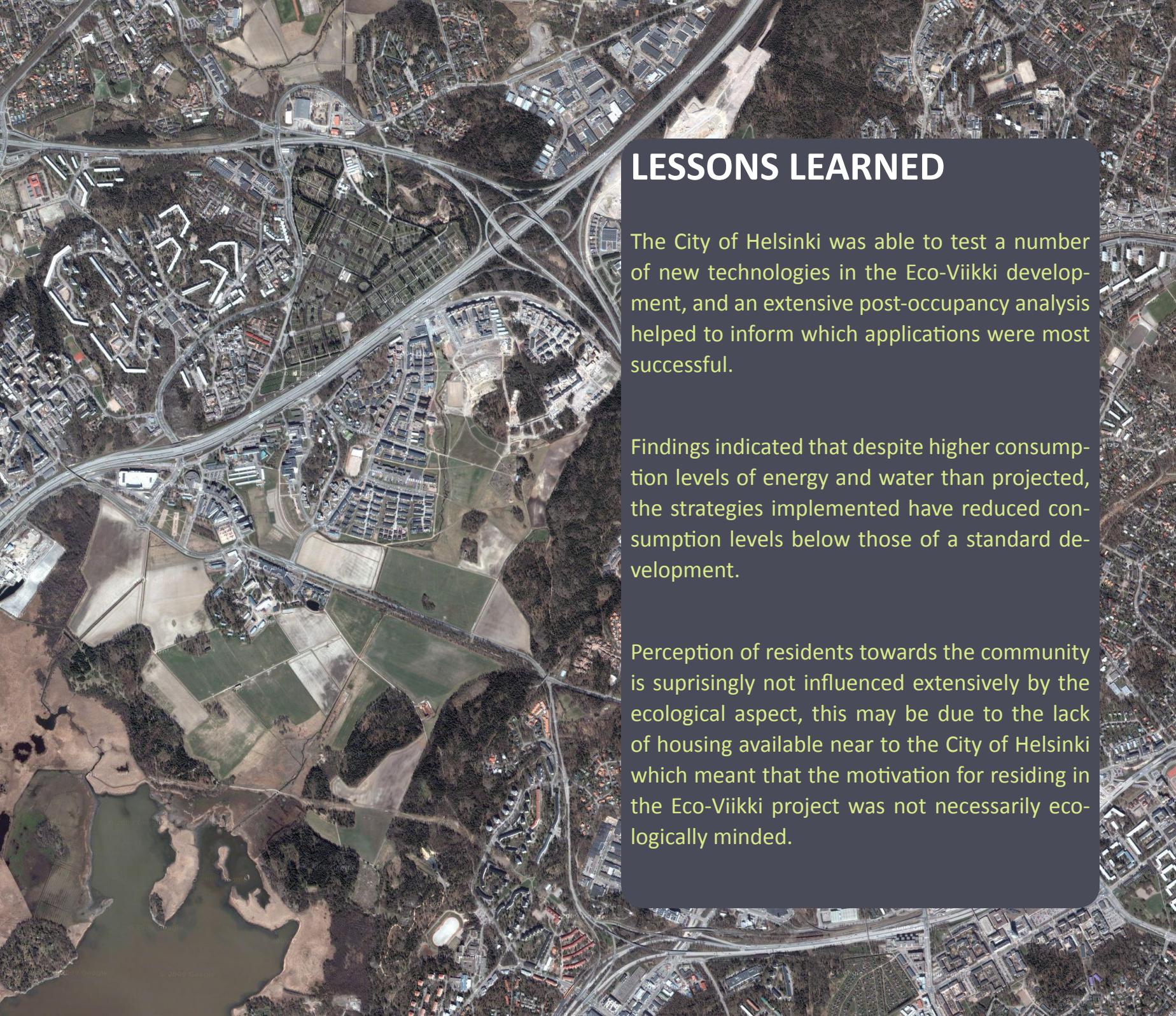
Architect: Petri Laaksonen

Originally conceived as a testing ground for technologies and objectives integral to the eco-community project proposed by the City of Helsinki, the Eco-Viikki project was the result of a competition held to make a sustainable planning model applicable to other areas as well.

The City of Helsinki focused primarily on the ecological aspects of the project competition, making very specific criteria for the competition applicants and scoring their proposals for emissions, biodiversity, food production and 14 other criteria. Beyond these initial requirements, the project has pursued and tested small scale solar energy production, stormwater management controls and other sustainable technologies.

The Eco-Viikki project has been closely monitored and assessed for consumption levels of water and energy, biodiversity on site, and the perceived success of the project in the eyes of residents. Results of these assessments have shown that actual energy and water usage are much higher than projected, but the project is still more efficient than the average housing project.

The City of Helsinki has published a report that looks at all aspects of sustainability related to the project and provides a harsh critique on the status. Commentary on the residents perception of what constitutes an ecological development, and the differing motivations for habitation at the site are interesting as most residents are not living there based primarily on the fact that it is an ecologically-minded development. The final results of the study being that Eco-Viikki differs very little from other new residential areas in terms of the residents perceptions.



LESSONS LEARNED

The City of Helsinki was able to test a number of new technologies in the Eco-Viikki development, and an extensive post-occupancy analysis helped to inform which applications were most successful.

Findings indicated that despite higher consumption levels of energy and water than projected, the strategies implemented have reduced consumption levels below those of a standard development.

Perception of residents towards the community is surprisingly not influenced extensively by the ecological aspect, this may be due to the lack of housing available near to the City of Helsinki which meant that the motivation for residing in the Eco-Viikki project was not necessarily ecologically minded.

BedZED - Sutton, United Kingdom



Size: 3.5 acres (1.42 ha); 82 residential units

Site: previously developed

Developer: BioRegional Development Group, the Peabody Trust, Bill Dunster Architects, Arup

Architect: Bill Dunster

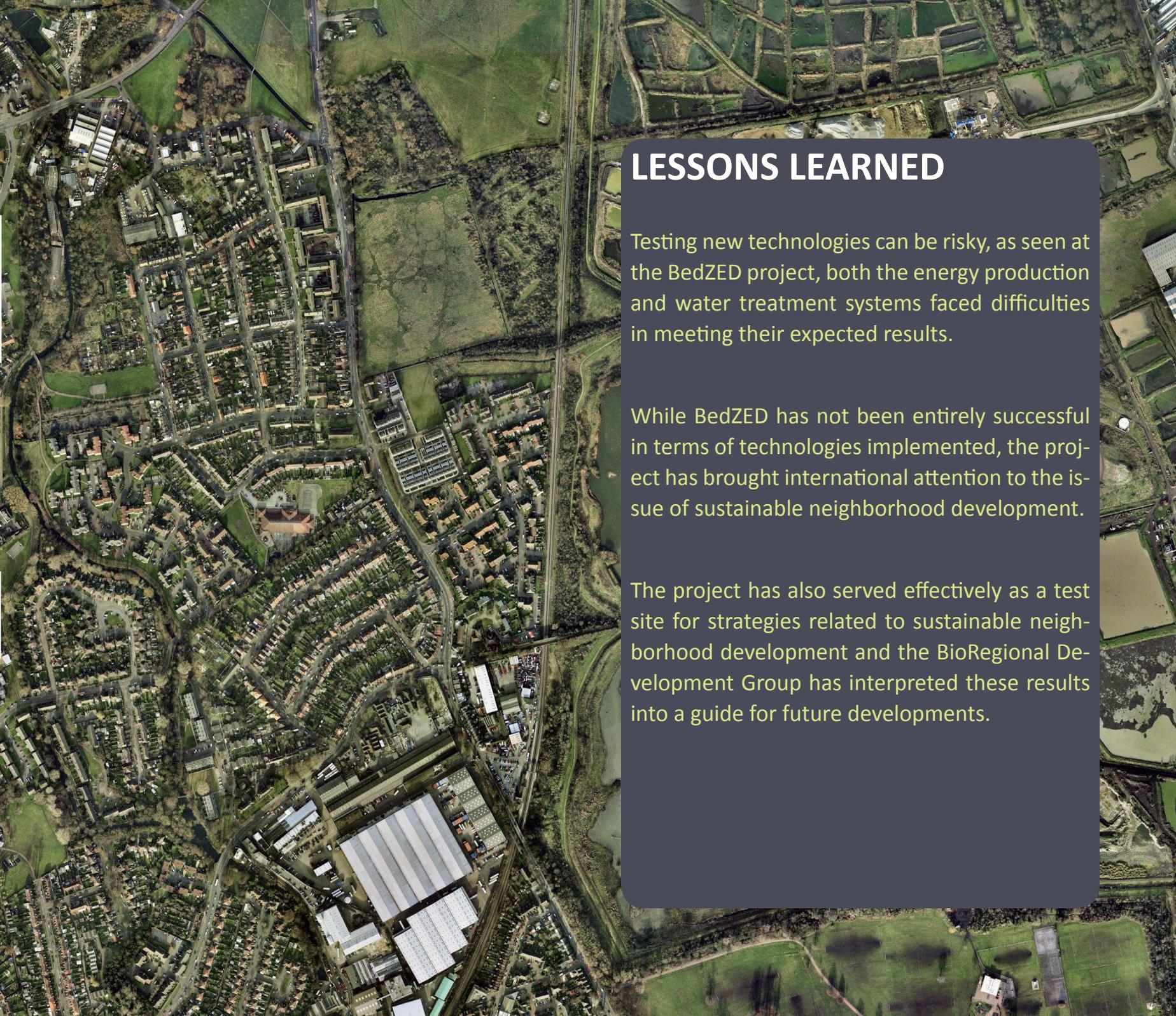
BedZED is one of the most widely known sustainable developments to date. Proposed by Bill Dunster and developed by a team of firms, the project would serve as a test ground for sustainable technologies, implementing state of the art technologies in terms of sewage and energy production.

The project has succeeded in attracting international attention for its integration of sustainable techniques and is often used as a reference for other sustainable neighborhood developments. The question, however, is how well does this project work?

The BioRegional Development Group did an analysis of the project seven years after it was completed, considering the energy, water, transport, food, waste, quality of life and ecological footprint. (Hodge 2009) As a zero-energy project, one of the outcomes was that it was difficult to achieve 100% energy production on site, additional resources needed to be taken from the grid, but the building-energy efficiency and attitude of residents towards reduced energy consumption did help to influence the creation of a United Kingdom wide policy on zero carbon housing by 2016.

Residents of BedZED have dealt with issues regarding the wastewater treatment facility, an innovative living machine located on-site, which was decommissioned due to high operating costs and the shortage of energy produced by on-site renewables, but state that their community and quality of life is far better than in the surrounding neighborhoods based on the community amenities offered and the pedestrian oriented organization of the site.

BioRegional has taken the information from this study and published a document to guide other developers in producing affordable carbon neutral developments.

An aerial photograph of a residential neighborhood. The houses are arranged in a grid-like pattern with winding streets. In the lower center, there is a large industrial building with a white roof. To the right, there are green fields and some water bodies. The overall scene is a mix of urban and natural elements.

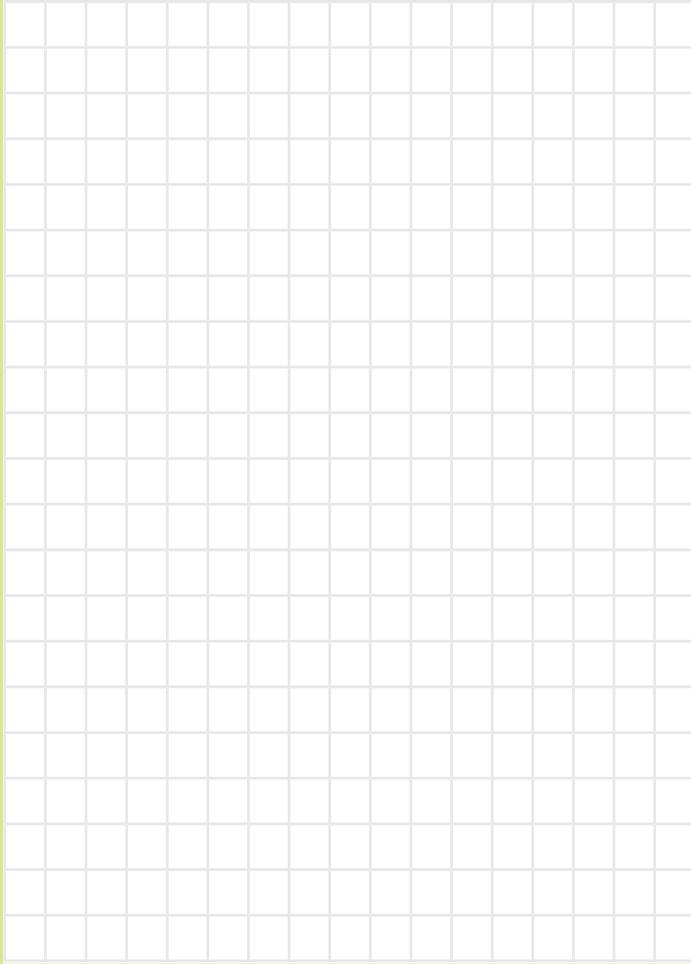
LESSONS LEARNED

Testing new technologies can be risky, as seen at the BedZED project, both the energy production and water treatment systems faced difficulties in meeting their expected results.

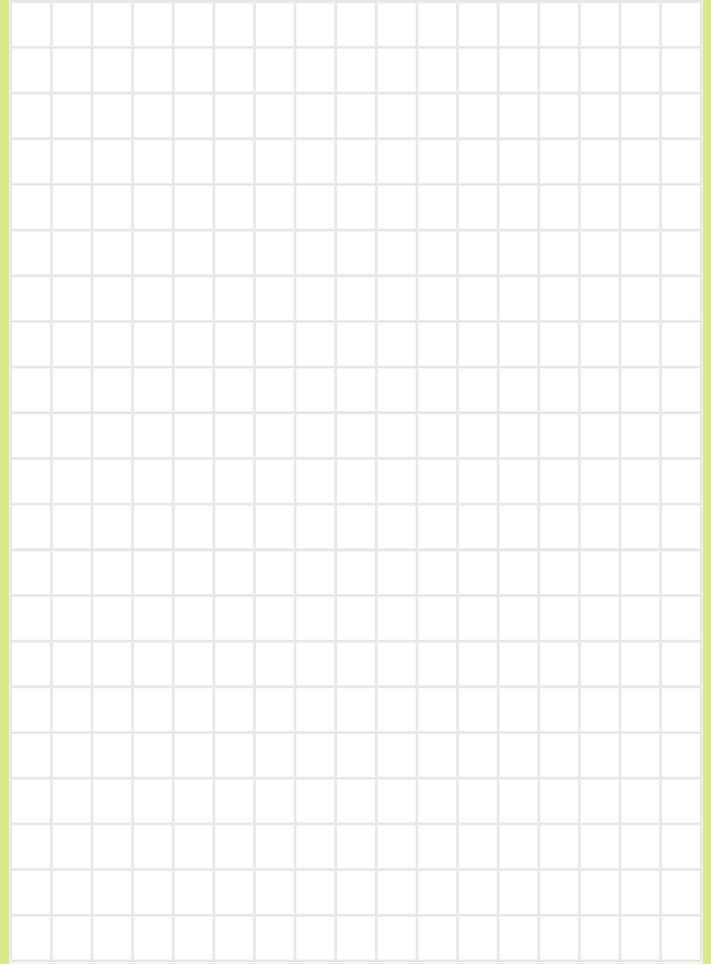
While BedZED has not been entirely successful in terms of technologies implemented, the project has brought international attention to the issue of sustainable neighborhood development.

The project has also served effectively as a test site for strategies related to sustainable neighborhood development and the BioRegional Development Group has interpreted these results into a guide for future developments.

How do European examples differ from the United States examples? What are the strengths of the European projects?

A large grid of graph paper with 20 columns and 30 rows, intended for writing answers to the question above.

Consider projects that you are familiar with, how might strategies seen in the European or United States case studies support those projects? Are there applicable features?

A large grid of graph paper with 20 columns and 30 rows, intended for writing answers to the question above.

4 Next Generation Strategies

What constitutes next generation planning strategies in the United States? In this chapter, several strategies will be introduced, namely those that cover issues relevant to the current environment and applicable to sustainable neighborhood development.

Though not a new topic, the issue of zoning continues to be relevant in the United States and form-based codes are a modern approach to the urban issues faced today. An evolution of traditional neighborhood design and the ideas of smart growth, form-based codes locate buildings by type rather than by use.

“Smart growth codes based on building configuration should replace conventional zoning based on land use. In these codes, big buildings are located among other big buildings, midsized buildings among other midsized buildings, and so on. Generally, from the neighborhood center to the neighborhood edge, buildings become less tall and occupy less of their lots. These different building forms imply and induce different land uses without making them the law. The coexistence within a neighborhood of multiple building types avoids physical and social monocultures and allows for natural evolution in

use, decreasing the likelihood of demolition. Compatible setbacks and parking location also lead to harmony despite a potential variety of mixed and changing uses. With rare exception, streets should be symmetrical, with the same building types on both sides and the zoning transitions at midblock, along the rear of the lots, where they are invisible. Consistent streetscapes thus result from inconsistent blocks.” (Duany, Lydon, Speck 2009)

The idea is that form-based codes can offer cities the opportunity to plan for more controlled growth, away from the sprawl that currently results from generic codes. Form-based codes regulate the urban form and can be applied on multiple scales. Regional planning can even be achieved coordinating the regional growth pattern through form-based code. Advantages are the ability to communicate a goal for the intended growth of the city due to the clear rules. Disadvantages are related to the need to create the vision for the codes in agreement with all stakeholders and the potential for issues to develop over time on the quality of the urban form, that which is visionary today may be outdated next year. The implementation of form-based codes will continue to expand in the United States, there are some small cities that are adopting the approach for their entire city code.

Related to form-based codes, but on another scale, the concept of Transect Planning has become an important topic in the United States. Transect Planning falls under the New Urbanism movement, and considers a larger scale than the traditional neighborhood developments and transit-oriented developments. The transect identifies zones from rural to urban and attempts to define physical characteristics that make each zone distinct. It also identifies the transition areas between the zones and sees the system as a whole. The Rural-to-Urban Transect identified in the United States is relevant to the context of the United States, and may not necessarily be applied in other contexts in the same form.

Smart Code, developed by Duany Plater Zyberk, is based upon the concept of Transect Planning and is an application of form-based code. An advantage to the transect is the ability to apply it to multiple scales and in the context of transportation, land use planning, etc. One of the criticisms of the transect is the attempt to simplify settlement types into a limited number of zones. The transect can be seen as one alternative framework towards a new kind of planning.

Early Adopters

At the forefront of innovative approaches to sustainable neighborhood development seem to be a number of municipalities in the United States who have taken it upon

themselves to create their own solutions when existing market products aren't fulfilling their needs.

Santa Monica, California, USA

One of the first was the City of Santa Monica, which developed the Santa Monica Sustainable City Plan in 1992, and has served as the basis for many other sustainability plans. What is significant about the plan is the framework for monitoring and assessment of the progress towards sustainability goals, the plan not only lays out quantifiable goals for different categories but also has in place a review process to update and amend the plan when necessary. The plan represents one of the first points-based evaluation systems for sustainability, and Santa Monica has continued to be a leader in city-wide sustainability efforts.

Seattle, Washington, USA

The City of Seattle, Washington has also made concerted efforts to improve sustainability by adopting a number of programs including the Sustainable Urban Neighborhoods Initiative. This initiative is a collaboration with local non-profits, the city, and residents to collect information about four neighborhoods and make suggestions for improvement. Two results of the collaboration are the Street Edge Alternatives Project (SEA Streets), a widely publicized project to control stormwater and illustrate the possibility for a

more sustainable street edge; and the High Point Redevelopment Plan, a new development combining low-income and market-rate housing that considers the community and environmental design.

The High Point Redevelopment Plan is a collaboration between the Seattle Housing Authority (an agency that provides affordable housing), community members in the targeted area, new prospective residents, and three architecture/landscape architecture firms. The project does not follow an established criteria based certification program. Instead, it has established guidelines to follow including pedestrian-friendly streets, reclamation of deconstructed units, materials selection, a natural drainage system, air quality, preservation of trees and open space, and the creation of an Environmental Impact Statement for the project. Additionally, the creation of community partnerships to advise the Seattle Housing Authority on redevelopment included the participation of civic leaders, neighborhood groups, residents, City of Seattle officials and the inclusion of many other interest groups. The project has received awards on local, state, national, and international levels.

Cleveland, Ohio, USA

Resulting from the development of LEED-ND projects in the city, and the need to make variances to city code to allow for each of them, the City of Cleveland worked together with project managers to create the Cleveland Green

Design Guidelines, a set of guidelines that outline minimum green requirements for city developments and allow for variances to city code when necessary. The guidelines were adopted as city policy in December 2008, overseen by a city appointed 'green team' bringing various interests together. Other cities in the midwest, such as Pittsburgh, Pennsylvania and Milwaukee, Wisconsin, have also adopted green guidelines but on a voluntary basis. (USGBC Local Government Guide, Cleveland Green Building Standard Handbook)

Portland, Oregon, USA

The Portland Eco-Districts Initiative is a framework put forth by the city of Portland that focuses on district scale sustainability performance planning and implementation planning. It considers public participation an important aspect of sustainability and focuses not only on the energy and materials aspects of sustainability but also the economic and social issues. The City of Portland funded the Portland+Oregon Sustainability Institute as an incubator for sustainable innovation and a place for government representatives, professionals, and academics to come together and collaborate on projects. The Institute will oversee the creation of several pilot eco-districts in the city, utilizing the skills and knowledge of its members to develop the projects.

Performance of Eco-Districts are measured by Community

Vitality, Air Quality & Carbon, Energy, Access & Mobility, Water, Habitat & Ecosystem Function, and Materials Management. An objective of program is to create public-private partnerships between residents, the municipality, the utilities, and other stakeholders. Focusing on creating engagement strategies, developing a management system, and identifying local economic potential are all a part of the Eco-District initiative.



The process to achieve these goals is a four step project; first, engagement and governance, then an assessment and strategic development, followed by project implementation and ongoing monitoring.

While the technical and social aspects of the initiative are developing well, the issue of funding continues to be a problem, as the districts are not owned by a single owner, creating the need for a financing tool that requires a gov-

ernance structure to coordinate interests. A community investment district approach is being considered which would tax local businesses for infrastructure improvements. The importance of the approach is that investment for infrastructure is being considered on a community level, meaning that communities would see a direct result of their tax money making them more likely to invest in future projects.

As the districts are still in the development stage, it will take some time before results and analysis can be completed on the effectiveness of the program.

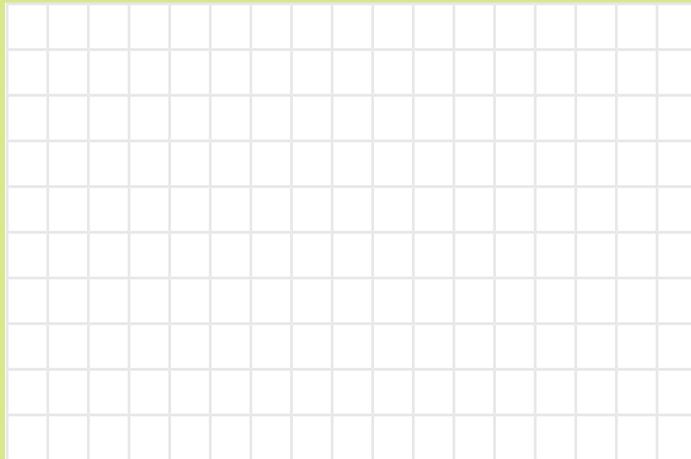
Conclusions

As early adoptors, these municipalities also serve as test cases for their strategies, assisting in creating a body of knowledge regarding the effectiveness of various strategies. The collection and interpretation of these experiences would be useful in pursuing future innovations without repeating already tested strategies.

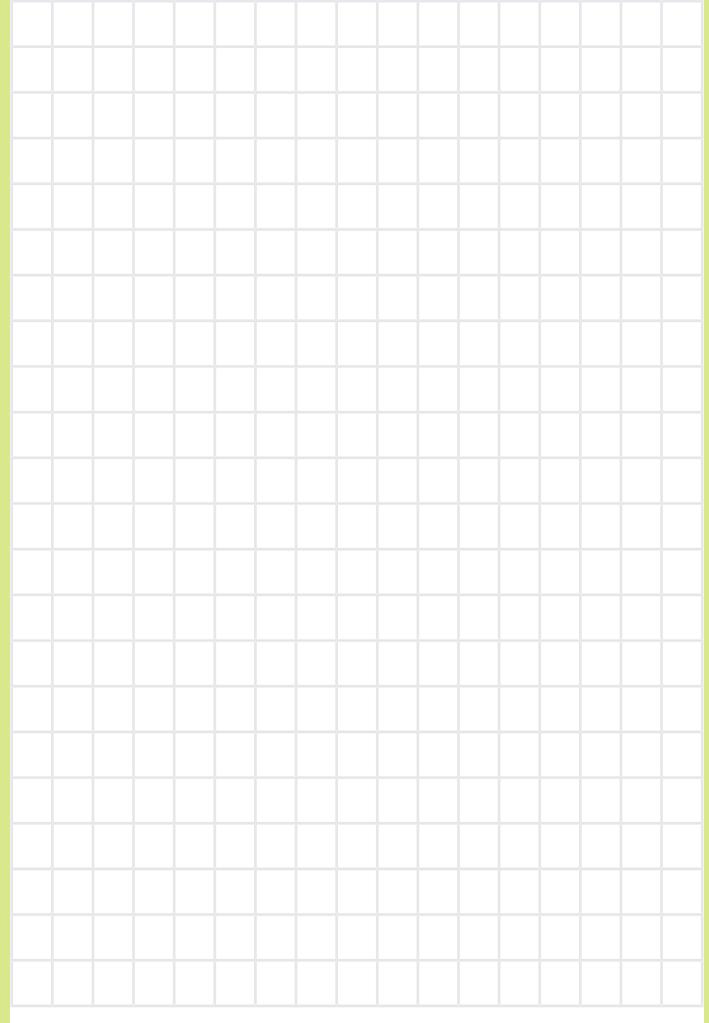
What do you think motivated these municipalities to pursue their own strategies towards sustainable neighborhood development?



Which strategies might be applied to projects in other contexts?



Are you aware of any other examples of independent strategies towards sustainable neighborhood development? Who are the main actors? Why?



Excerpts from:

Looking Beyond LEED-ND

Hank Dittmar

Prince's Foundation for the Built Environment

The Charter of the Congress for the New Urbanism describes “disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society’s built heritage as one interrelated community-building challenge.” And indeed our great strengths as a design focused movement have been twofold: the attempt to see the problem holistically, and the understanding that we are facing a great challenge without having all the answers to hand.

Our great successes have come in two areas, and both are essential. First we have evolved a great body of design practice, all of which is transforming the way that the built environment is produced. The new urbanists have introduced the charrette as a means of tackling complex design problems, revitalised regional planning, helped stimulate a boom in new public transport systems and transit oriented development, reintroduced form based codes, developed the transect as an urban analysis tool, evolved the builder’s pattern book to become urban pattern books, and stimulated a new understanding of local identity and regional character.

Our second area of success has been in challenging standards and replacing specialised serial planning with standards that reflect the complexity of urbanism. The new LEED-ND is a vital step toward a standard for greener urbanism. The proposal will teach environmentalists and green builders alike that location matters and that a green building in an auto dependent suburb is not a green building. But it is just the start – and I believe that we should remember that is a floor, and not a ceiling..

We are a fractious movement, and the holistic approach envisioned by the charter lurches forward, with factions of the movement reminding us that we are failing the affordability test, or the organic places test, or the architecture test, or the green test. But the way to move us forward is through design evolution, for that is our core strength, and standards can at best reflect the state of the practice, and not where the practice needs to be. That is why I want to look beyond LEED-ND, as we have just barely begun to evolve our urban design techniques to reflect sustainable environmental practice, and environmental practice is still largely anti-urban in philosophy and technique.

First, we need to understand that new urbanism is key to helping to bring about greener living and this is particularly true with respect to greenhouse gas emissions.

Second, merely asserting that good urbanism is better than sprawl is simply not good enough.

Third, addressing the challenges ahead is not a matter of checklists, or tokenistic goal setting, or even standards: it is a matter of design – and we have a hell of a lot of work ahead before we can lay a claim to green urbanism!

Just doing better than sprawl is no longer good enough. At the same time, we must not solve to the LEED-ND test, and miss the other tests, of affordability, accessibility, housing and employment diversity and the like.

Designing in an ecological manner can no longer be treated as a question of gizmos and gadgets for the building, or as a question of assessment or review afterwards. It is time to evolve new urbanist practice to confront new challenges. And to do this properly our environmental technique, just as much as our architecture and our streets and blocks, should be grounded in an understanding of vernacular approaches to climate and ecology.

I believe that there are a number of distinct problems for which design intelligence rather than policy intelligence needs to be brought to bear. First is the question of scale. And this applies to many environmental issues, including sustainable drainage, renewable energy applications including wind and Combined Heat and Power.

The second challenge for urbanists is to relate environmental solutions to their urban context. And this goes right back to the anti urban bias of both the environmen-

tal and the engineering professions. If we accept that cities are at the heart of the solution to the environmental problem, then we must design environmental techniques that respond appropriately to setting and place in the transect.

The third issue is one that has both a design dimension and a PR dimension. When I was in school, ecological architecture was about studying Taos pueblo, and understanding how to build softly with little impact on the land, and we worked with adobe and straw bale. While this eco-vernacular, hobbitty approach to green still exists, at some point in the last ten years, green has become a very high-tech thing, and has gotten itself associated with steel, glass. Perhaps it began with this project, Bill Dunster's BedZED, which at least had high aspirations and still provides useful information about materials, and systems.

We clearly do not have all the answers to the challenge of creating sustainable communities, or of adapting traditional building and urbanism to a world of peak oil, global climate change and possible sea level rise. While traditional urbanism may reduce travel, and it seems to be clear that traditional approaches to making buildings that can respond passively to climate are proving relevant today, tradition must evolve to respond to changed conditions. This evolution, in an era of production building, presents a challenge to all of us – a challenge that can be met by a concerted design effort.

CNU XV, May 2007, Philadelphia, Pennsylvania, USA

5 How can these strategies be integrated?

Interpretation by the reader of the material presented is an important step in procuring integration between the approaches. One's perspective, and ability to consider the framework upon which it is built, provides the basis for which planning approaches are developed. Having the ability to understand a situation from a completely different perspective provides the opportunity to find solutions that may not have been considered.

Taking the lessons presented in this toolkit, it is the aim that the reader walk away with a basic understanding of the approaches to sustainable neighborhood development in Europe and the United States, but more importantly, develops the skills to consider urban issues from an alternative perspective.

The United States approach, currently based on a criteria-based analysis of projects, quantifiable and market-driven has been presented, illustrating areas in which this model has clear advantages, and areas where it is lacking. Quantifiable measurements of sustainability are controversial, how can such a concept be reduced into a limited number of characteristics? but provide a scale upon which projects can be compared. The systemic ap-

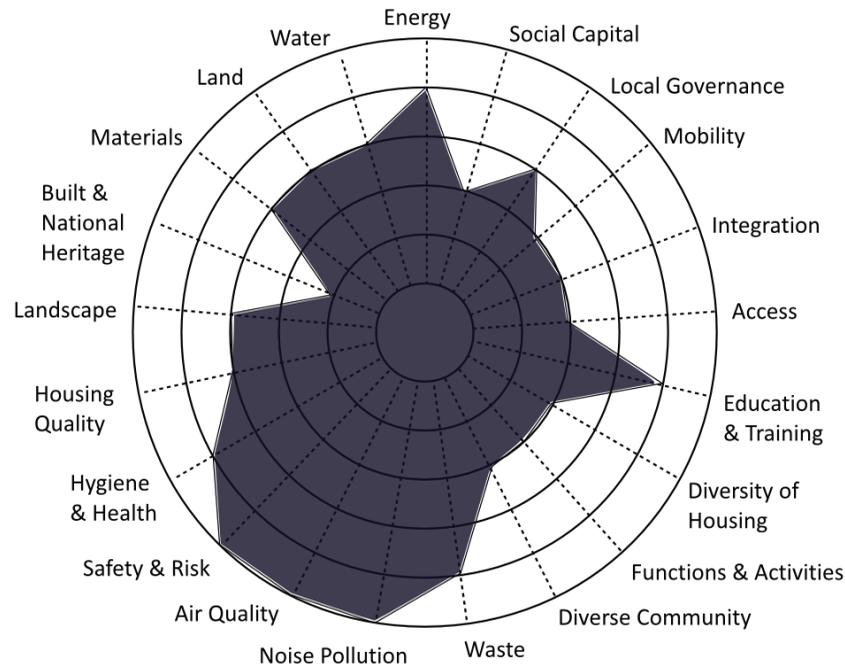
proach which has primarily shaped Europe's advances in the area feature a valuation of civic participation and participatory planning that hasn't been common in the United States approach within this field.

Exchange of ideas, particularly between professionals, academics, and industry leaders should be encouraged, whether it be through professional organizations, governmental meetings, or independent pursuit, to integrate the skills and opportunities experienced into a worldwide knowledge base that can be tapped into by those looking for innovative solutions to urban issues. Organizations like the Urban Land Institute are a vital starting point from which to build knowledge bases.

The following pages provide exercises for the reader to consider the material presented and think about possibilities for application in their own contexts. It is the hope that these exercises will inspire action and move professionals dealing with the issue of sustainable neighborhood development (and even beyond) in the direction of an integrated network of information and a comprehensive perspective on the issues related to these developments.

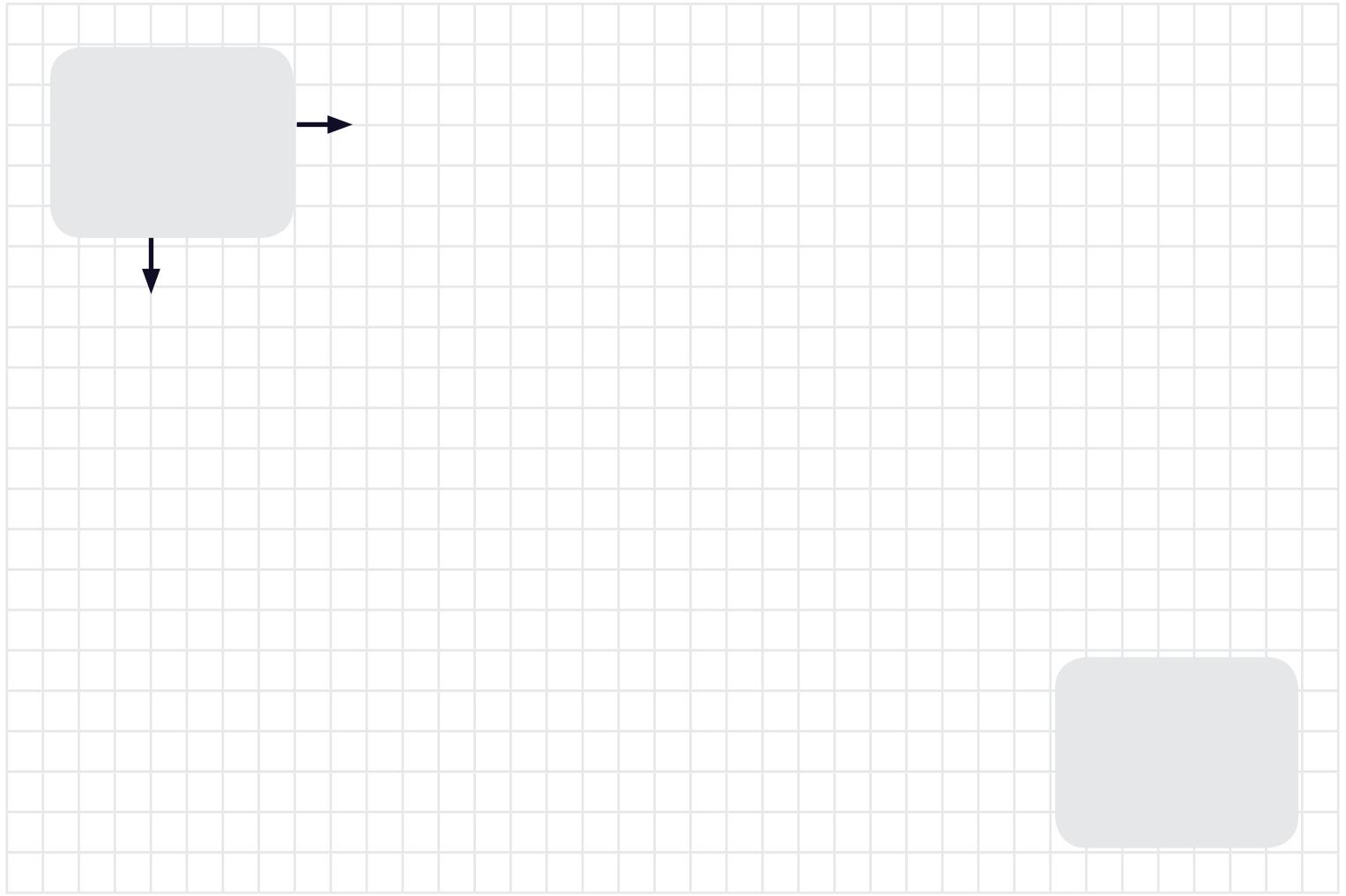
Neighborhood Profiles can be used to analyze the attributes of a community, identifying potential areas for improvement and areas that should be given more consideration and can be applied to both new development plans and existing neighborhoods. The chart below demonstrates an example neighborhood profile.

Using the chart: Make a dot at the intersection of the category line and the ring to which it fulfills that category, categories where there is room for improvement will connect with smaller rings, connecting the categories, the profile becomes evident, a neighborhood where there are no significant issues would be a complete full circle.



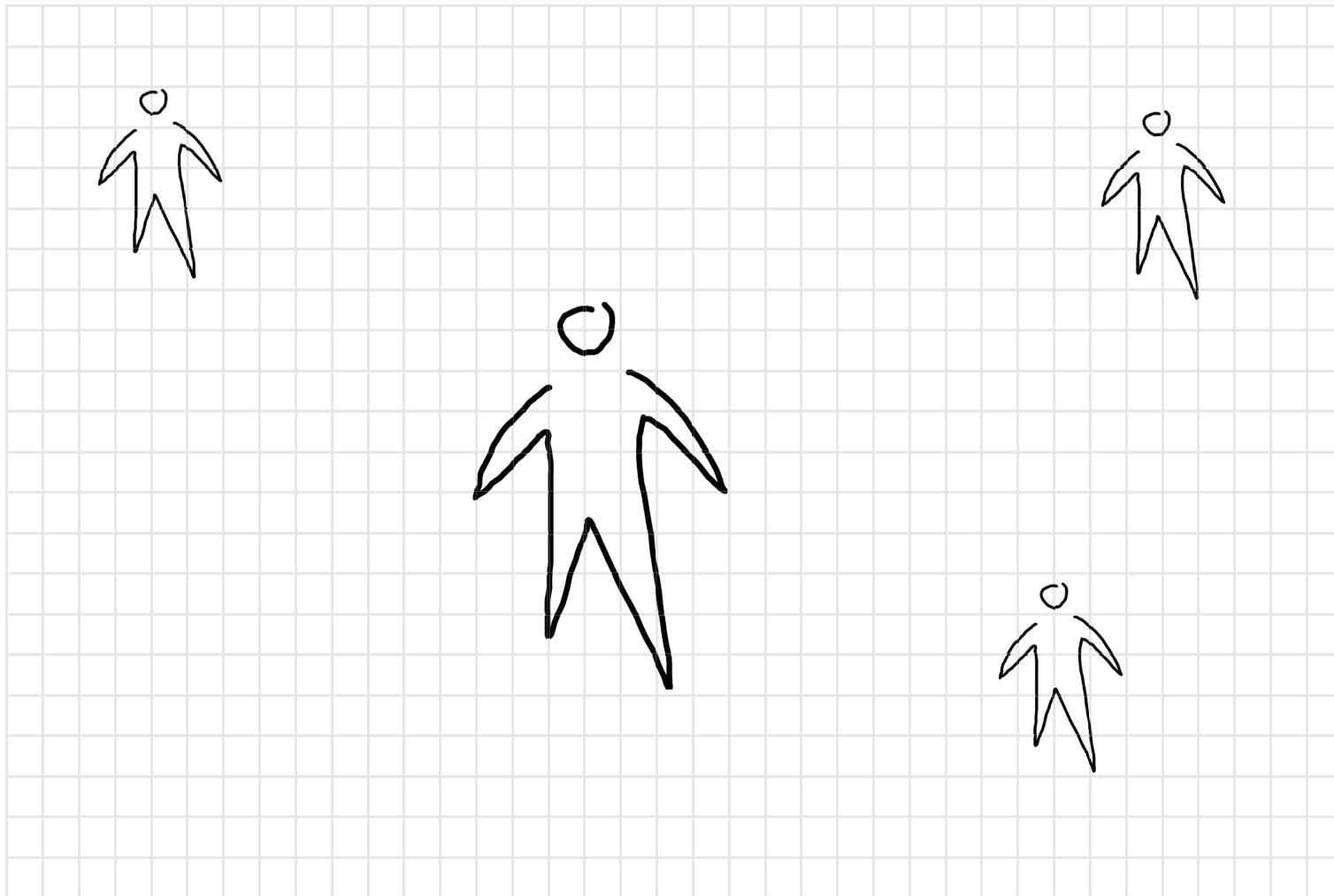
Analysing this chart, one can make some qualitative predictions about the neighborhood. The chart demonstrates a lack in social and cultural attributes, the population is not very diverse, social capital and integration are low, and local governance is average. Attributes related to energy and environmental design are generally higher, indicating that attention should be directed in redevelopment/development plans towards social aspects. An example of a neighborhood that could look like this is a middle-class suburb on the periphery of an average city.

**Consider how you might influence early adoption of sustainable neighborhood design strategies.
What is the process that would take place to make small-scale market transformations?
Make a flow chart showing the steps that could be taken to make a change in local policy.**

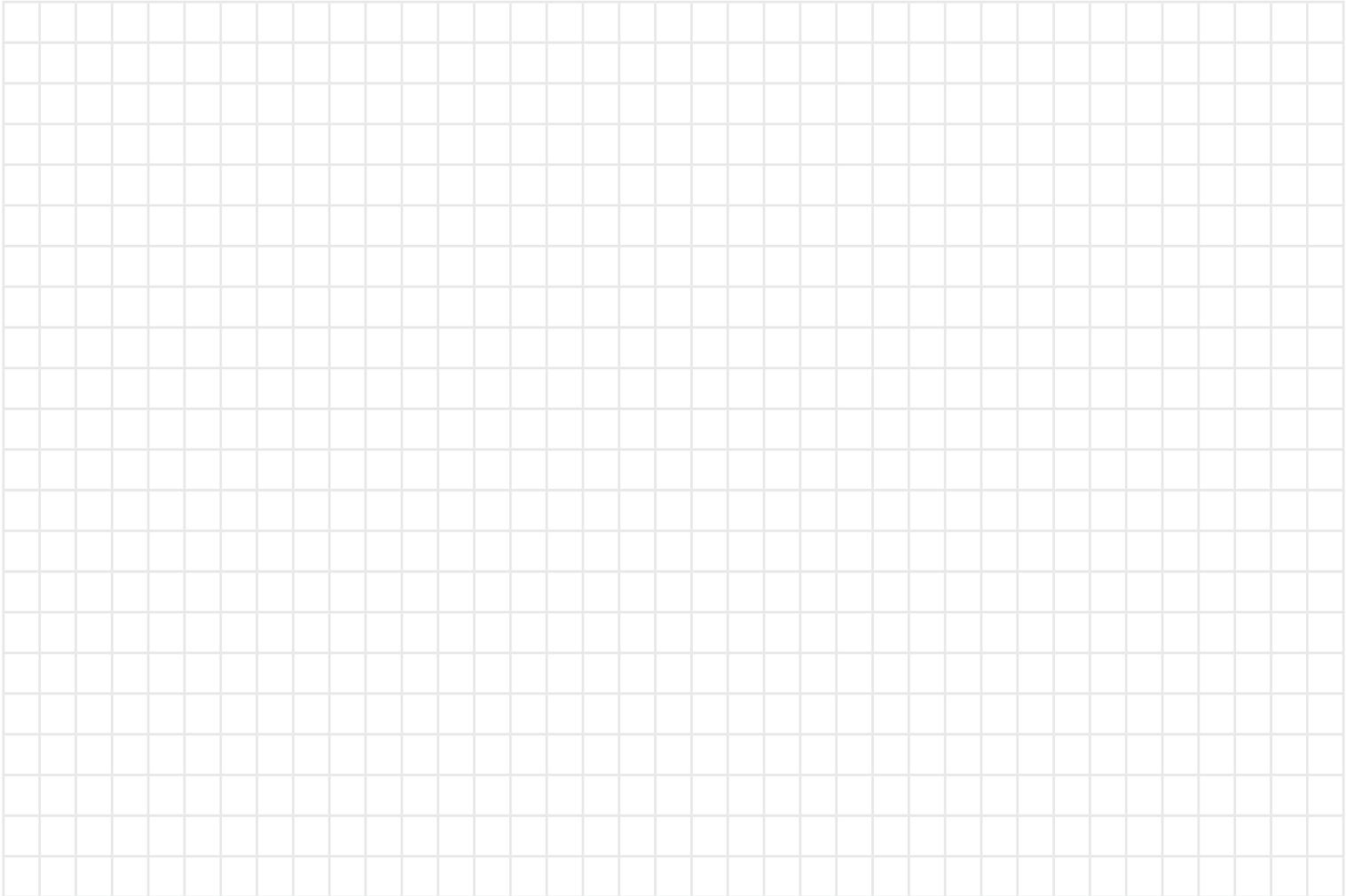


How can you help to create dialogue among professionals in the field of sustainable neighborhood development?

Think about a few individuals that should be communicating and map out how you can help make those connections and establish a stronger professional network.



Whether you are an architect, planner, engineer, social worker, or any other occupation, and whether you are a European, a U.S. Citizen, or a citizen of the World, reflect on how you might consider a perspective other than your own when addressing the next issue you face that has implications on urban sustainability.

A large grid of graph paper for writing, consisting of 20 columns and 20 rows of small squares.

A

Appendix

United States Green Building Council LEED® 2009 for Neighborhood Development Rating System

Smart Location & Linkage

27 Possible Points

Prereq 1	Smart Location	Req
Prereq 2	Imperiled Species and Ecological Communities	Req
Prereq 3	Wetland and Water Body Conservation	Req
Prereq 4	Agricultural Land Conservation	Req
Prereq 5	Floodplain Avoidance	Req
Credit 1	Preferred Locations	10
Credit 2	Brownfield Redevelopment	2
Credit 3	Locations with Reduced Automobile Dependence	7
Credit 4	Bicycle Network and Storage	1
Credit 5	Housing and Jobs Proximity	3
Credit 6	Steep Slope Protection	1
Credit 7	Site Design for Habitat or Wetland & Water Body Conservation	1
Credit 8	Restoration of Habitat or Wetlands & Water Bodies	1
Credit 9	Long-term Conservation Management of Habitat or Wetlands & Water Bodies	1

Neighborhood Pattern & Design

44 Possible Points

Prereq 1	Walkable Streets	Req
Prereq 2	Compact Development	Req
Prereq 3	Connected and Open Community	Req
Credit 1	Walkable Streets	12
Credit 2	Compact Development	6
Credit 3	Mixed-Use Neighborhood Centers	4
Credit 4	Mixed-Income Diverse Communities	7
Credit 5	Reduced Parking Footprint	1
Credit 6	Street Network	2
Credit 7	Transit Facilities	1
Credit 8	Transportation Demand Management	2
Credit 9	Access to Civic and Public Spaces	1
Credit 10	Access to Recreation Facilities	1
Credit 11	Visitability and Universal Design	1
Credit 12	Community Outreach and Involvement	2
Credit 13	Local Food Production	1
Credit 14	Tree-Lined and Shaded Streets	2
Credit 15	Neighborhood Schools	1

Green Infrastructure & Buildings

29 Possible Points

Prereq 1	Certified Green Building	Req
Prereq 2	Minimum Building Energy Efficiency	Req
Prereq 3	Minimum Building Water Efficiency	Req
Prereq 4	Construction Activity Pollution Prevention	Req
Credit 1	Certified Green Buildings	Req
Credit 2	Building Energy Efficiency	2
Credit 3	Building Water Efficiency	1
Credit 4	Water-Efficient Landscaping	1
Credit 5	Existing Building Reuse	1
Credit 6	Historic Resource Preservation and Adaptive Use	1
Credit 7	Minimized Site Disturbance in Design and Construction	1
Credit 8	Stormwater Management	4
Credit 9	Heat Island Reduction	1
Credit 10	Solar Orientation	1
Credit 11	On-Site Renewable Energy Sources	3
Credit 12	District Heating and Cooling	2
Credit 13	Infrastructure Energy Efficiency	1
Credit 14	Wastewater Management	2
Credit 15	Recycled Content in Infrastructure	1
Credit 16	Solid Waste Management Infrastructure	1
Credit 17	Light Pollution Reduction	1

Innovation and Design Process

6 Possible Points

Credit 1	Innovation and Exemplary Performance	1-5
Credit 2	LEED® Accredited Professional	1

Regional Priority Credit

4 Possible Points

Credit 1	Regional Priority	1-4
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LEED 2009 for Neighborhood Development Certification Levels

100 base points plus 6 possible Innovation & Design Process and 4 possible Regional Priority Credit points

Certified	40-49 points
Silver	50-59 points
Gold	60-79 points
Platinum	80 points and above

NPD Prerequisite 1: Walkable Streets Required

Intent

To promote transportation efficiency, including reduced vehicle miles traveled (VMT). To promote walking by providing safe, appealing, and comfortable street environments that support public health by reducing pedestrian injuries and encouraging daily physical activity.

Requirements

Design and build the project to achieve all of the following:

- a. For 90% of new building frontage, a principal functional entry on the front façade faces a public space, such as a street, square, park, paseo, or plaza, but not a parking lot, and is connected to sidewalks or equivalent provisions for walking. The square, park, or plaza must be at least 50 feet wide at a point perpendicular to each entry.
- b. At least 15% of existing and new street frontage within and bordering the project has a minimum building height-to-street-width ratio of 1:3 (i.e., a minimum of 1 foot of building height for every 3 feet of street width).
 - Nonmotorized rights-of-way may be counted toward the 15% requirement, but 100% of such spaces must have a minimum building-height-to-street-width ratio of 1:1.
 - Projects with bordering street frontage must meet only their proportional share of the height-to-width ratio (i.e., only on the project side of the street).
 - Street frontage is measured in linear feet.

- Building height is measured to eaves or the top of the roof for a flat-roof structure, and street width is measured façade to façade. For block frontages with multiple heights and/or widths, use average heights or widths weighted by each segment's linear share of the total block distance.
 - Alleys and driveways are excluded.
- c. Continuous sidewalks or equivalent all-weather provisions for walking are provided along both sides of 90% of streets or frontage within the project, including the project side of streets bordering the project. New sidewalks, whether adjacent to streets or not, must be at least 8 feet wide on retail or mixed-use blocks and at least 4 feet wide on all other blocks. Equivalent provisions for walking include woonerfs and all-weather-surface footpaths. Alleys, driveways, and reconstructed existing sidewalks are excluded from these calculations.
 - d. No more than 20% of the street frontages within the project are faced directly by garage and service bay openings.

Projects in a designated historic district subject to review by a local historic preservation entity are exempt from (b), (c), and (d) if approval for compliance is not granted by the review body. Projects in historic districts listed in or eligible for listing in a state register or the National Register of Historic Places that are subject to review by a state historic preservation office or the National Park Service are exempt from (b), (c), and (d) if approval for compliance is not granted.

LEED® 2009 for Neighborhood Development Rating System

LEED® 2009 for Neighborhood Development Pilot Project Statistics

Census Item	Pilot Zip Codes	All Zip Codes	Pilot Zips As a % of All Zips	All Urban Areas	Pilot Zips As a % of All Urban Areas
Population					
Urban area location	90.9%	77.6%	117	100.0%	90
Rural location	9.1%	22.4%	41	0.0%	N/A
Persons/sq.mi.	5890	1221	482	2656	222
Minority	36.1%	30.9%	117	29.8%	121
Median household income	\$44,484	\$41,994	106	\$44,840	99
Households below poverty	15.7%	12.4%	127	12.9%	122
Work Commute					
Drive alone	64.3%	75.7%	85	74.3%	87
Carpool	12.1%	12.2%	99	11.9%	102
Public transportation	11.7%	4.7%	249	6.6%	177
Cycle/walk	7.5%	3.4%	221	3.5%	214
Work at home	3.7%	3.3%	112	2.9%	128
Mean travel time to work (min)	25.3	25.5	99	25.1	101
Housing					
Person/household	2.65	2.59	102	2.62	101
Owner occupied units	50.1%	66.2%	76	61.5%	81
Renter occupied units	49.9%	33.8%	148	38.5%	130
SF units	52.6%	65.8%	80	55.3%	95
MF 2-4 units	13.5%	9.1%	149	9.1%	148
MF 5-19 units	12.9%	8.7%	148	9.5%	136
MF 20+ units	17.9%	8.6%	208	10.0%	179
Median structure age (years)	42	27	156	39	106

Source: Criterion Planners, Census Bureau, and USGBC

B

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Charters/Frameworks

A number of charters and frameworks are referred to throughout the toolkit and can be found below. Many of them can be located online.

Aalborg Charter

Agenda 21

Bristol Accord

Charter of the New Urbanism

Cittaslow Charter

Leadership in Energy and Environmental Design Rating System (LEED)

LEED for Neighborhood Development Rating System (LEED-ND)

SmartCode

STAR Community Index

Sustainable Communities Plan

Sustainable Sites Initiative

The Natural Step Framework

The Portland Metro EcoDistricts Initiative

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Page	Credit
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52	Karin Miller
54	Lundgaard & Tranberg Arkitekter
56	Piq-Wing, Google Earth
58	Kate Andrews, inhabitat.com
66	Portland Sustainability Institute
	Satellite images on pages 31, 35, 39, 43, 53, 55, 57, and 59 all taken from Google Maps.

Web Resources

CittaSlow Movement

<http://www.cittaslow.it>

The Congress of New Urbanism

<http://www.cnu.org>

Criterion Planners, Portland, Oregon

<http://www.crit.com>

Natural Resources Defense Council

<http://www.nrdc.org>

Portland Sustainability Institute

<http://www.pdxinstitute.org>

Seattle Housing Authority

<http://www.seattlehousing.org>

Smart Code Central

<http://smartcodecentral.org>

Star Community Index, ICLEI-Local Gov

<http://www.icleiusa.org/star>

Sustainable Sites Initiative

<http://www.sustainablesites.org>

United States Green Building Council

<http://www.usgbc.org>

Urban Land Institute

<http://www.uli.org>

U.S. Dept. of Housing & Urban Development

<http://www.hud.gov>

USGBC LEED®-Neighborhood Development

<http://www.usgbc.org/leed/nd>

