

Social Equity and EcoDistrict Development:
Best Practices in Northern Europe and North America

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ABSTRACT

As urban populations grow and the popularity of infill and sustainable development increases, practitioners have made attempts at outlining new industry standards for the development of urban space. The ecodistrict model, conceptualized in Northern Europe a decade ago, has been receiving a lot of attention in the United States lately as the ideal scale and method for sustainable urban development. Proponents tout its ability to achieve high standards of environmental efficiency, while also addressing social equity and economic concerns. This research examines ecodistrict examples in Germany, Sweden, Canada and the United States in an effort to better understand how effectively each variation of the model incorporates social equity principles. American cities will soon experience a surge in district-scale infill development projects that will have lasting effects on the surrounding urban fabric. Comprehensive, replicable and egalitarian guidelines for all three categories of sustainability will be fundamental to the success of those efforts.

This study finds that while the ecodistrict model is evolving to better meet social equity principles, there are still barriers to participation for the lowest income and renting populations. Recommendations for an improved model include: strategic economic development in coordination with ecodistrict development, inclusionary housing policies supported by community programming, resident-led ecodistrict governance with municipal support, access to educational resources and proactive leadership to foster community interaction.

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FOREWORD

I chose this research topic when I first learned of the ecodistrict concept. It gave me great hope for our planet's future. My career prior to graduate school was in education and organizing for innovation in the green building industry. It has long been clear to me that development of one building or one sub-division at a time, with no relationship to the natural environment, transportation or to neighboring facilities and communities, was a far outdated method. The ecodistrict represented a complete system in action; a development project that took into account criteria far beyond the standard pro forma. Therefore, I set out to see if those perceived benefits are truly present for all members of the urban community.

In this thesis, I offer suggestions based on conversations and observations recorded in less than a year's time. Clearly, there is more investigation needed, but what I can say is that I am still hopeful. Improvements to the ecodistrict model can be made to better incorporate social equity goals (as you will read in the following pages). However, even in its current state, the ecodistrict concept is pushing the boundaries of traditional urban design and forcing interdisciplinary collaboration at a rare scale. I am excited to contribute to the thinking behind the ecodistrict movement with this thesis and I look forward to practicing what I've learned in my professional career.

CHAPTER 1: INTRODUCTION

Industry Trends and Terms

As smart growth strategies grow in popularity and as global warming looms, urban design is evolving into new forms. Worldwide urban development projects are adopting sustainability goals that seek to address environmental, equitable and economic issues equally (Gunder 2007). Architects, planners, and designers are calling for a more compact urban form that integrates nature with the city, as well as greater use of energy efficient building, water and transportation alternatives (Elmer and Fraker 2011). Furthermore, a more holistic, infill approach to urban development is now widely supported by local and regional land use stakeholders (Wheeler 2002, McConnell and Wiley 2010). In a response to this trend towards high-density, sustainable development, several European cities have taken a leading role in the creation of what is becoming commonly known as an ecodistrict.

An ecodistrict is defined as an integrated and resilient district or series of neighborhoods that is resource efficient; that captures, manages, and reuses a majority of energy, water and waste on-site; is home to a range of transportation options; provides a rich diversity of habitat and open space; and enhances community engagement and wellbeing (PoSI 2011). Ecodistricts are often the result of deliberate actions taken by municipal planners and local landholders to create

more housing, services and commercial space within a city without further impact to the natural environment.

The use of “district” in the term “ecodistrict” borrows conceptually from the field of ecology and its support of watershed-scale ecosystem management. Instead of addressing one environmental component at a time, watershed management aims to combine social, economic, and environmental concerns with approaches that treat forest, range, agricultural, and urban parcels in an integrated manner (Naiman 1992). Similarly, ecodistrict plans are developed in ways that integrate infrastructure and uses into one highly efficient system rather than parcel by parcel.

The use of “eco” in the term “ecodistrict” draws from the literature on urban ecology, which recognizes the profound relationship between our natural ecosystem and human activity, especially within the urban environment (Gaston 2010). To varying degrees, ecodistricts are deliberately designed to support human activity that supports our ecosystem.

Significantly, ecodistricts have been developed, because there are examples in development all over the world. Many of the ecodistrict projects in North America have adopted guiding principles from European ecodistrict examples: conservation of site identity, expansion of public transport, wise use of resources, safeguarding and interconnection of green spaces, assurance of social harmony, workforce

stability, cultivation of public-private partnerships and life-long learning opportunities (Daseking et al. 2010, PoSI 2011).

Ecodistricts are further characterized by “values of diversity and participation, equity in decision-making and investment, health and well being of the community and conservation and stewardship” (Seltzer et al 2010). The ability to address so many needs in one development plan has contributed to the rise in ecodistrict popularity. The ecodistrict appears to be the only scale at which all three components of sustainability can truly be implemented, well managed and accurately measured. If as Roger Trancik explains, links are the glue of the city, then at their core, ecodistricts are intricately linked networks of people, systems and uses (Trancik 1986). This backbone of connectivity and efficiency sets the stage for further programming and the style of governance required to maintain a thriving sustainable community.

While it is undoubtedly clear that ecodistricts have employed infrastructure technology in a way that far exceeds the environmental performance of other types of development. It is still unclear how well current iterations of the model serve the social equity goals that are touted by ecodistrict advocates (Seltzer et al. 2010). This thesis is an attempt to understand the variety of ecodistrict models in existence and to specifically critique them in the areas of resident diversity, housing affordability, community interaction, community decision-making and educational resources.

In 1996, the President's Council on Sustainable Development defined “social equity” as “equal opportunity, in a safe and healthy environment” (Dempsey et. al 2009). Sociologists view social equity as a combination of distributive and procedural justice (Folger 1977, Lind and Tyler 1988). People should have both equal access to opportunities (distributive) and should be treated fairly by society, government and institutions (procedural) as they seek those opportunities. In other words, “Equity derives from a concept of social justice. It represents a belief that there are some things which people should have, that there are basic needs that should be fulfilled, that burdens and rewards should not be spread too divergently across the community, and that policy should be directed with impartiality, fairness and justice towards these ends” (Beder 2000). However, despite its inclusion in nearly every discussion of sustainability theory, social equity is the least defined and least understood element of the sustainability triad: equity, economy and environment (Seltzer et al. 2010).

Dempsey further explains, “There is relatively limited literature that focuses specifically on social sustainability, while a broader literature exists on the overlapping concepts of social capital, social cohesion, social inclusion and social exclusion. Social sustainability is a wide-ranging multi-dimensional concept...with no consensus on how [its] goals are defined” (Dempsey et al. 2009). In fact, many governments that intend to practice sustainable development and claim to uphold

the principles of social equity unknowingly select policies that exacerbate the inequalities present in cities today (Beder 2000).

Additionally, ecodistricts are enormous undertakings and the development firms that would likely be able to finance such a project often prioritize other elements ahead of social equity. The Urban Land Institute (ULI), an organization that analyzes trends in the real estate industry published a recent article addressing this issue, offering ten principles that should guide large-scale development including principles of place-making, element integration both socially and environmentally and community engagement in early stages (ULI 2011). The ecodistrict scale offers developers the opportunity to take risks with innovative social concepts that can help the project to succeed in the long term.

In summary, the ecodistrict model provides a space where social equity can be planned for and measured. However, in practice it is not that simple. Beder concludes, "If equity is to be taken seriously then new ways of decision-making must be found that enable the multifaceted values associated with the environment to be fully considered and heeded. Merely extending market values to incorporate the environment into existing economic systems will not achieve this" (Beder 2000). Thus, there is value in the examination of the social intentions of ecodistrict projects in different government contexts and in determining how well each existing case has succeeded at implementation.

For the purposes of this thesis, social equity will be defined as one's ability to be included in ecodistrict development, if one so desires. I am interested in perceptions of exclusivity regarding sustainable development and seek to determine ways in which such projects can be available, inviting and long-term solutions for all types of communities, not just those that can afford to be early-adopters. In my opinion, the ecodistrict model must serve both high-income and low-income residents if it is to be upheld as a "sustainable" solution. Ultimately, innovation towards more environmentally harmonious living is dependant on the equity with which it can be applied.

CHAPTER 2: REVIEW OF THE LITERATURE

Importance of Scale

Many researchers, designers and planners have argued that the ideal scale for sustainable development is the “district scale,” because it is large enough to support independent infrastructure systems, but small enough to be managed as one project with an agreed upon set of goals (Buckley 2009, O’Reagan et al. 2009, Dempsey 2011). For example, a building that earns LEED Platinum¹ certification may excel in addressing energy efficiency, water use and other internal performance criteria, but the project scope is too small and its connection to the surrounding landscape is not accounted for. At the next level up, a site plan can to begin to address economic and equity issues through the incorporation of inclusionary housing and mixed-use facilities, but a site is not large enough to support its own infrastructure systems, which significantly limits the use of the most efficient environmental technologies. Neighborhoods, defined as primarily residential developments, neglect the need for employment and business facilities. Without either component to round out the project area’s uses, it will likely be difficult to secure long-term social and financial stability. On the other hand, if the scale of a project becomes too large and planners attempt a citywide approach to sustainable development, goal achievement can

¹ LEED certification is an industry recognized rating system for green building projects. LEED Platinum is the highest level of environmental achievement a project can reach, by adhering to a strict set of guidelines published by the U.S. Green Building Council. (USGBC 2011) [View Source](#)

become bogged down with too many conflicting interests and complicated coordination.

The measurable success of completed ecodistrict projects demonstrates the advantages of coordinating development at the district scale in three distinct categories: highly efficient physical design, the proper balance between complexity and community carrying capacity and the perpetuation of a new global model for environmentally conscious living. Such benefits and possible deficiencies of the ecodistrict approach to development will be discussed in the following sections.

Physical Design

While each ecodistrict plan is born out of unique circumstances and with a long-term vision for a particular city, there are many similarities present in the design elements across cases. The ecodistricts discussed in this paper are fundamentally based on a closed-loop infrastructure system, a physical example of the type of problem solving that embraces Simon Sadler's theory of whole design. Sadler explains, "Whole design sought the whole not as a philosophical, future goal to be approached through abstract logic, but as an already present environmental condition with which to align through practice" (Sadler 2008). In other words, the solutions that ecodistricts offer have been in front of us all along, but it is the approach to problem solving and a new willingness to link project components that is reshaping the way cities are built.

The closed-loop systems featured in ecodistricts provide very controlled and practical solutions to resolving environmental abuses such as the overuse of energy resources, dependency on gas-powered automobiles and the underutilization of organic compost. The efficiencies ecodistricts achieve are only possible because of a system-wide integrated design approach. European ecodistricts, especially, rely on the latest technologies, implement strict use limits and understand how to capitalize on the resource savings.

The physical design components of ecodistricts can be further illustrated through Randolph Hester's five new principles of sustainable design: centeredness, connectedness, fairness, sensible status seeking and sacredness (Hester 2006). Hester argues that taken on their own, neither the principles of ecology nor democracy are sufficient support for a thriving community and puts forth the five principles of sustainable design to drive home the idea that if even one component is missing the overall system will fail.

As a physical demonstration of centeredness and connectivity, ecodistricts are typically transit-oriented developments, focused around lively, multi-modal, pedestrian scale and interconnected main streets. In most cases, walking to the commercial districts and recreational amenities can be done in just a few minutes, significantly reducing the volume of cars regularly on the road in that area.

Ecodistricts strive to provide all of the basic needs in one place (housing, work, recreation), but planners also recognize that transit connections to outside resources are vital lifelines.

To provide a socially equitable environment, most ecodistrict housing stock will include affordable housing provisions and other culturally and economically sensitive design elements. For example, in Kronsberg, an ecodistrict in Germany, 10% of the housing was designed based on Muslim values in an effort to be inclusive of all potential residents (Rumming 2003). The deliberate inclusion of culturally and economically sensitive housing is possible because there are enough standard housing units within an ecodistrict for the project's overall financial feasibility, thus it can potentially produce a more diverse development. This is a significant benefit ecodistricts have over other models of development.

With defined boundaries, ecodistricts allow for a focused sensibility of one's functional space. Those who seek a balanced and involved living environment can find it at the district scale. Residents are able to access the resources they need, form relationships with local leaders and work together for the betterment of their community. Ecodistricts are often managed independently, because their needs are so different than the surrounding urban areas (Beatley 2000). This localized management model allows for community-generated action to be easily and appropriately manifested in residents' own backyards.

As for sacredness, ecodistrict planning seeks to engage community members as deeply as possible, allowing each development that succeeds in such an effort to reflect the residents' values and create a deep sense of shared meaning. In several ecodistricts, sacred spaces have been preserved through the incorporation of existing buildings or through the enhancement of water features that had previously been inaccessible. In addition, providing residents with a means to their concept of better living can be a deeply spiritual gift. With so many eco-amenities provided, those that live in ecodistricts are more easily able to feel good about their relationship to the environment, thus making ecodistrict landscapes sacred spaces in and of themselves.

In addition to these categories, and as Walter Hood argues, community design should reflect the true needs of its residents (Hood 1999). Many of the European ecodistricts have utilized a participatory design process to involve incoming residents in the creation of their own spaces. In many cases, groups of residents have had the opportunity to work closely with the architect assigned to build their home in designing a unique and appropriate living space. In Western Harbor, an ecodistrict in Sweden, architects planned for a wide variety of building types by divvying up the neighborhood into blocks. Each block became the responsibility of one of the twenty-one different architects working on the project (EALA 2005). Planners were confident that a distribution of design would give a more organic feel

to the development and that multiple housing types would meet more people's needs.

Community Carrying Capacity

In a critique of sprawl communities, Andrés Duany recalls that traditional development models arose organically as a response to need (Duany 2000). Before World War II, as the population grew, more housing was built, more jobs were created and so forth. The urban boundary expanded with no limit in sight. However, Duany further explains that if a region is not growing economically it should not be growing geographically (Duany 2000). It can be assumed then, that there are factors beyond population growth that need to be considered when designing community space. The residents of a given community can only support so much – their collective abilities have a defined carrying capacity and respecting that balance is an integral component of sustainable design.

Carrying capacity specifically refers to “the number of individuals who can be supported in a given geographical area within natural resource limits, and without degrading the natural social, cultural and economic environment for present and future generations” (Carrying Capacity Network 2001). This definition is similar to the Bruntland Commission's commonly accepted definition of sustainability² in that

² The World Commission on Environment and Development (the Brundtland Commission) agreed in 1987 on a definition of sustainable development that is now generally recognized: Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (United Nations Economic Commission for Europe 2004) [View Source](#)

it is forward-looking with an interest in protecting resources. However, the concept of carrying capacity is distinctive in its use of limits. Unlike sustainability, carrying capacity recognizes that regardless of efforts towards efficiency, there is a finite load that any individual or community can take on. Planning with carrying capacity as a guiding principle optimizes the ability of a community to positively manage and contribute to the betterment of their own circumstances. This is a balance that ecodistrict design seeks.

Christopher Alexander highlights the notions of scale and access in his seminal work, *A Pattern Language*. Presenting 253 patterns required for livability, Alexander describes, “Individuals have no effective voice in any community of more than 5,000-10,000 persons” (Alexander et al. 1977). Alexander further explains that an individual’s voice is central to the sustainability of a community because people can only have a genuine effect on local government when the units of local government are small enough to create an immediate link between the individual and the governing body (Alexander et al. 1977). With ecodistrict populations averaging in Alexander’s ideal range, the individual resident is readily able to find their voice and put it good use.

Model for Behavioral Change

One could argue that ecodistrict design is born out of the modernist ideal; *if you build it they will change* (De Button 2006). In other words, human behavior will

follow a set of parameters designed to foster better economic, environmental and social health – so long as those parameters are present. While this concept likely raises concerns about who is entitled to prescribe such overt direction, the method has proven to be successful in modifying human behavior toward a more respectful relationship with the natural environment.

An ecodistrict's identity is highly representative of its sustainability goals. Therefore, it is a unique vantage point from which to observe how people choose to adapt to the age of conservation. Incorporating ecological solutions as well as technical, ecodistricts uniquely align with both strategies of sustainability as defined by Sim Van der Ryn and Stuart Cowan (Van der Ryn and Cowan 2007). Ecodistricts often utilize brownfields as development sites, which demonstrates the planner's inherent desire to conserve and improve upon existing building processes rather than to start over on fresh land. Additionally, ecodistricts employ the latest technological advances in whole systems design bringing new meaning to water reclamation and waste collection to the people who live there. Residents are exposed both to the benefits of redevelopment and to new technologies. The ecodistrict becomes a living laboratory for assessing how each component of the designed system functions as a part of daily living practices.

One example of the psychological influence the environment can have on the behavior of individuals is the curbside recycling program in Portland, Oregon (a

North American city currently developing its own series of ecodistricts). In this case, the high adoption rate of yellow curbside recycling bins can be attributed to simple social dynamics. Residents saw their neighbors using a yellow bin and didn't want to feel left out, so they started to use one as well (Seltzer et al. 2010). This behavior pattern is the basis of community-based social marketing, a concept developed by Doug McKenzie-Mohr.

Community-based social marketing reveals the significant role psychology plays in fostering sustainable initiatives and capitalizes on it (McKenzie-Mohr 2002).

Ecodistrict planners understand this phenomenon. The high population densities and close quarters of ecodistricts provide the ideal landscape to make certain that every community member is aware of those who adopt parking limitations, compost or take on other more eco-behaviors. A frenzy of desire to live in the most ecologically sound way or as Roger Evernden would posit "the most righteous way" ensues (Evernden 1992).

Hester's theory of ecological democracy takes a different approach to discussing community dynamics and encourages actions that are guided by a true understanding of natural processes and social relationships within communities (Hester 2006). While ecodistricts do rely on the social motivations described above, they also provide an opportunity to experience a new way of living with relatively low risk. Direct exposure to new lifestyle choices leads to a deeper understanding of

the natural systems benefiting from sustainable design and to an even greater willingness to permanently change one's own behavior. In the Hammarby Sjostad ecodistrict (of Freiburg, Germany), planners have made great efforts to provide residents with ongoing education on the systems used in their neighborhoods as well as new advances in the relevant fields (EALA 2005). Residents are encouraged to learn from each other and ultimately act as stewards for the environment and their community.

As Robert Thayer observes, "sustainable landscapes are only meaningful beyond the level of direct sensory perception when their information content is clearly imageable to the greater public" (Thayer 1989). Due to the transparency of infrastructure systems and innovations in physical design, ecodistricts are not only able to provide an imageable framework for their residents, but also for the citizens, governments and visionaries of the world who are intently watching the evolution of sustainable development in practice. Ecodistricts are quickly becoming a popular global development concept as more and more cities take similar projects on (Seltzer et al. 2010).

EcoDistrict Limits

The ecodistrict concept has many merits, but as with all design, there are limits to its performance. The current ecodistrict method tends to be very prescriptive and leaves little room for flexibility in the future. As Lynch would explain, a good city is

one in which “the continuity of the ecology is maintained, while progressive change is permitted” (Lynch 1981). Ecodistricts are on the cutting-edge of integrative infrastructure systems, but few plans address how the district might adapt as the current systems become obsolete.

Ecodistricts embrace sustainability, but the definition of what that is for each community can vary greatly. Some communities look towards ecology for guidance on how best to live. However, following nature as a model is often times at odds with the intended goals of an ecodistrict even though it may not seem that way. As Simon Sadler acknowledges, “the stature of ecology in design remains uncertain, as though it is a matter of taste or branding, or worse that it answers blindly to laws of energy and biology that may be managed but not altered” (Sadler 2008).

Ecodistricts have finite boundaries, which is an inherently “unnatural” design element, which can perpetuate exclusionary social boundaries as well.

Furthermore, ecodistricts can also promote a fairly insular view when it comes to social interaction and resource access. One could argue that ecodistricts are following similar development patterns to enclave communities, where those on the inside only take care of their own (Blokland and Savage 2008). With well-defined boundaries, ecodistricts clearly delineate who is on the inside and who is not. Even with well-intentioned, inclusive planning, I will demonstrate through this thesis that most ecodistrict housing ends up belonging to an affluent demographic. This

phenomenon perpetuates an air of righteousness around those who proactively “sacrifice” the pleasures of indulgent living in an effort to live as environmentally friendly as possible. This is not an outcome one would expect from a community built on embracing the values at the heart of the sustainability movement. However, the residents themselves are often not conscious of this situation; they desperately want to be in the right and typically think that they are.

The popularity of the ecodistrict experience is only growing. Upon completion, ecodistricts can attract droves of tourists, putting relatively unknown places on the global map. This can be a wonderful boost to the local economy, but if used as a ploy to create tourism, it can also be detrimental to the integrity of the sustainability movement. In Spain, over last two decades, the number of urban developments bearing the label “ecodistrict” has considerably increased. However, the building practices have generally remained the same (Harguindéguy and Arias 2009). With the number of these dubious projects on the rise, one cannot take the term ecodistrict at face value; the plans must be authentic, innovative and genuine attempts at a more environmentally sound development practice. The building industry would greatly benefit from some type of district-scale rating system to alleviate any confusion around what constitutes an ecodistrict and what does not (PoSI 2011).

Social Equity and Measurement

Measuring sustainable development at the district-scale is a practice that still needs fine-tuning. Several rating scales have been recognized such as LEED-ND³ and the landscape-based Sustainable Sites Initiative⁴, but none has taken the lead as the global standard.

Looking at the sustainable development of urban housing only, Winston and Eastaway outline the following abbreviated set of measurements for comparing projects (Winston and Eastaway 2007):

- Availability of dwellings
- Relative size of dwelling stock
- Size of dwelling rooms per person and living space per person
- Amenities available
- State of repair of dwelling stock
- Housing mix
- Affordability of housing
- Facilities in residential
- Environmental quality of residential area
- Noise pollution; air pollution; accessibility of green space
- Public safety in residential area
- Area used for settlement
- Energy consumption of housing

³ LEED certification is an industry recognized rating system for green building projects published by the U.S. Green Building Council. LEED-ND is a set of development standards that can be implemented to achieve environmental efficiencies at the neighborhood scale. (USGBC 2011) [View Source](#)

⁴ Sustainable Sites Initiative (SSI) is another set of industry recognized development guidelines created to promote sustainable land development and management practices that can apply to sites with and without buildings. (SSI 2010) [View Source](#)

Some of the above criteria can be used to measure social equity specifically, such as rooms per person, amenities or services available, affordability and safety. Many researchers have chosen to develop social equity indices to determine and compare the vulnerability and opportunity levels for a particular project site. This method is useful because it combines complex data across a broad set of social equity criteria into a score that is easy to compare to other projects and to the region as a whole. An example of this is the social equity assessment of transit-priority areas⁵ in the Sacramento region developed by the Center for Regional Change (Benner and Tithi 2011). Researchers brainstormed possible data sources that would indicate levels of opportunity and vulnerability at the neighborhood level and then refined the list based on what data was available and useful to a broad set of regional stakeholders. Finally, they mapped scores using GIS for each proposed transit-priority area to make easy comparisons that informed the final land use and transportation decisions made by the Sacramento Area Council of Governments (SACOG) (Benner and Tithi 2011). The final list of social equity indicators is outlined on the next page (Table 2.1).

⁵ In the fall of 2010, the Sacramento Area Council of Governments (SACOG) and its partners received a grant from the U.S. Department of Housing and Urban Development for regional planning to accelerate transit-oriented development in the Sacramento area. The first phase of the involved assessing and selecting a limited number of Transit Priority Areas (TPAs) that would become the priority focus for SACOG's efforts. (Benner and Tithi 2011)

TABLE 2.1 – Social Equity Indicators Developed by the Center for Regional Change**Vulnerability**

- *Inadequate housing:* Lack of affordability; lack of diversity of housing stock to meet current and future needs; inability for families to age in place; high housing costs.
- *Inadequate services:* Lack of grocery stores; high concentration of fast food chains; lack of access to medical care; lack of social services; lack of aging services
- *Poor neighborhood quality:* High crime; Poor school safety; vacant lots and homes; lack of neighborhood stability; lack of vitality; lack of equality; low walkability/bike-ability; lack of shade
- *Poor mobility and transportation:* Low frequency and quality of service; poor connectivity; few transportation choices; low knowledge of transportation options; low road safety
- *Poor education:* Low graduation rates; low test scores; poor quality teaching; few after-school programs; little availability of job training services
- *Low civic participation:* Low voter turnout; low involvement in neighborhood associations; low internet access
- *Poor health:* High asthma rates; lack of health insurance; lack of availability of parks and open space; high particulate emissions
- *Poor economic opportunities:* High un/underemployment; high poverty; poor job quality
- *Poor youth development:* High youth un/under employment; few recreational opportunities

Opportunities

- *Good environment:* Availability of parks and open space; high quality air; adequate and good quality drinking water; effective stewardship of green areas
- *Quality housing:* Affordable housing; diversity of housing types; high quality rental housing; significant wealth accumulation through home ownership
- *High neighborhood quality:* Safe; diverse
- *Good mobility and transportation options:* Walkable; bike-able; adequate structures and services for physical disabled
- *Educational opportunities:* Strong student performance; high school quality; accessible child care and pre-school; available adult education
- *Strong civic participation:* Available locations for neighborhood meetings; English as a Second Language resources; abundant information on community/neighborhood activities and services; high levels of volunteerism
- *Good health:* Good access to medical services; high levels of insurance coverage; culturally sensitive services at nearby hospitals and clinics; availability of physical activity
- *Economic opportunity:* Access to jobs; high quality job growth; strong business environment; adequate infrastructure to support new local businesses; good job quality; job training opportunities
- *Youth development:* Youth recreation activities/opportunities; youth employment and training.

(Source: Benner and Tithi 2011)

The Portland Sustainability Institute (PoSI) who is developing five ecodistrict pilots in Portland, Oregon uses the diagram below to outline specific measurement areas and their connections to each other. The chart offers options for strategizing within the PoSI ecodistrict model (PoSI 2011):

FIGURE 2.1 – Possible EcoDistrict Strategies



(Source: Portland Sustainability Institute 2011).

The measurement models offered above do not fit the goals of this thesis exactly, but they do offer ideas for how one could score and compare ecodistrict projects across the globe. The research presented here focuses on the following five areas:

- Resident Diversity
- Housing Affordability
- Access to Decision-making
- Educational Resources
- Community Interaction

In combination, these five comparison criteria (taken conceptually from Table 2.1 above) offer a broad understanding of how each ecodistrict incorporates social equity. Further, the information was relatively easy to access for each of the seven

case studies that will be described in later sections. A more detailed comparison can be done, but is not possible within the scope of this work.

Previous Ecodistrict Research

Much attention has already been paid to the emerging ecodistricts in Northern Europe. For instance, in 2000, Timothy Beatley published a comprehensive text on the Green Urbanism movement sweeping European cities. His work identified trends in a multitude of planning areas including, transit-oriented development, creative housing, urban ecology and community participation in design. In each category, lessons for American development were offered, many of which, while valuable, have yet to manifest stateside. Beatley notes, “there is no question that economic, political, geographic and other circumstances make many of the [ecodistrict] programs more feasible in European countries than the United States” (Beatley 2000). That being said, there are still concepts in practice in Europe that can greatly inform the way infill development is carried out here in America.

Through a comparative analysis of the Rieselfeld and Vauban neighborhoods in Freiburg, Germany, Broadus furthers the discussion of the European ecodistrict as a global model by asking if it is even feasibly replicable in the United States. Broadus’ response remains skeptical, acknowledging the vast differences in populations, problems and political power that are present. However, she advocates

for incremental adoption of features like high density mixed-land uses, higher quality transit access or lower minimum parking standards as a more U.S. friendly approach (Broadbent 2010).

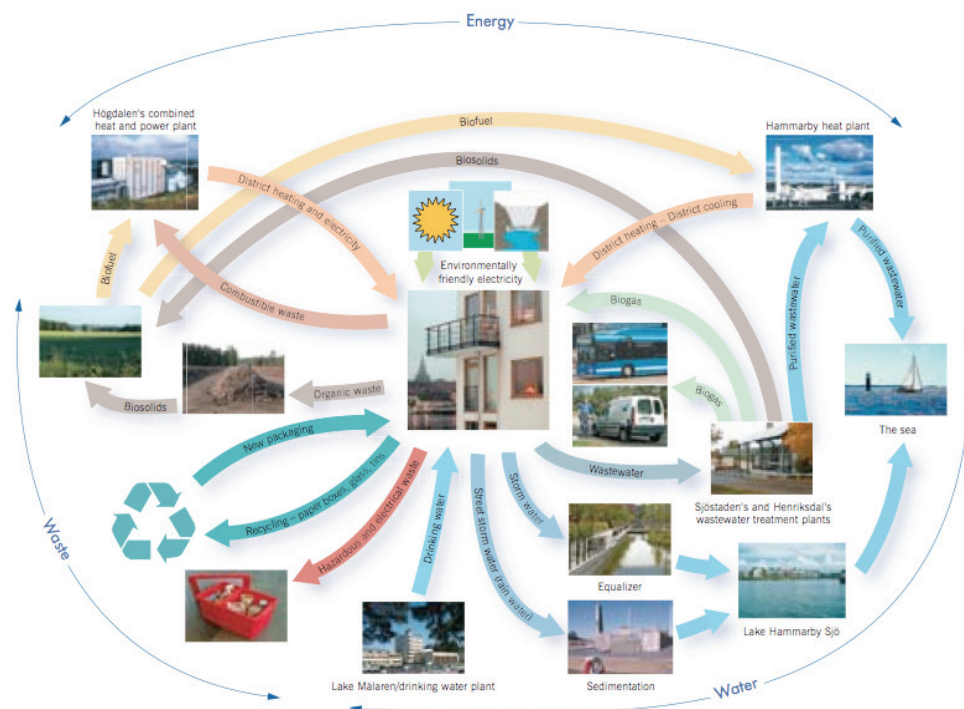
Vonkeman elaborates on what sustainable development means in the European city and regional context, pointing out that any sustainability plan must address both the environment and development simultaneously in a balanced way (Vonkeman 2000). The European ecodistricts studied for this paper have embraced this concept with vigor. While questions regarding success in the area of social sustainability remain, European ecodistricts have mastered the integration of technology with environmental and urban planning.

One main feature of European ecodistricts is the reduction of daily dependence on the automobile. Several ecodistricts have chosen pedestrian and bicycle only street networks in residential areas, restricting car access to commercial districts and the perimeter. Newman and Kentworthy have focused their work on overcoming automobile dependence as a means to increase the sustainability of urban design (Newman and Kentworthy 2000). Borgers et al. acknowledges the attitudes of resistance towards car-restrained areas, but offers solutions to compensate for them. For example, if developers include secured parking facilities, good non-motorized transport facilities and access to public transport at a short distance from home residents are more likely to be satisfied with reduced private parking

(Borgers et al. 2008). Many of these accommodations are included in the European ecodistrict model, which in combination with discouraging tax policy, may account for the seemingly smooth transition towards a reduction in car ownership.

Cost-savings coupled with energy savings is what drives the Hammarby model of ecodistrict development (Figure 2.2). The Hammarby model, developed for Hammarby Sjöstad (an ecodistrict in Stockholm, Sweden), is well-known amongst developers worldwide for its fully integrated infrastructure designed from a foundation of inter-disciplinary cooperation and innovative technologies (Glaube 2007).

FIGURE 2.2 – The Hammarby Model



(Source: Glaube 2007)

Unlike the Hammarby model, which focuses solely on the connectivity of infrastructure systems, the Portland Sustainability Institute in Portland, Oregon has spent considerable time in the last few years crafting a robust framework for ecodistrict development based on theories of civic ecology. As outlined in the table below (Table 2.2), researchers at PoSI feel that the current paradigm of sustainable community design has placed too great a focus on technological improvements. They advocate moving into an era that embraces the ideals of civic ecology (Seltzer et al. 2010); an idea that is supported by many scholars outside of PoSI as well (Tidball and Krasny 2007, 2009, Alberti 2008, Grimm et al. 2008, Wheeler 2012).

TABLE 2.2 – Current Paradigm vs. Civic Ecology Paradigm

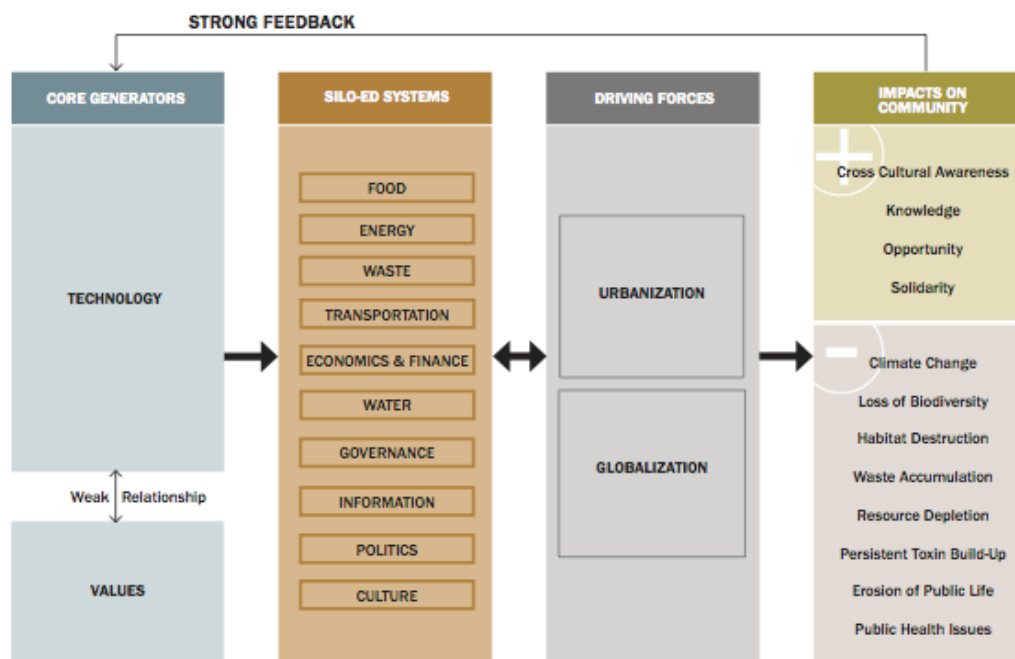
Issue	Current Sustainable Community Paradigm	Civic Ecology Paradigm Shift
core driver	technology	shared community values
underlying ethic	efficiency	sufficiency
	the measurable	the perceivable
nature of defining problem and solution	“black box: and opaque	transparent
	expert-driven	citizen-driven
	isolated systems	integrated systems
basis for design	better science	better democracy
	greener Hardware	integrated software
	form follows function	form follows flow
	passive observers consume greener “stuff”	active citizens produce and own sustainability
outcome	urbanization	sustainable cities

(Source: Seltzer et al. 2010)

The strong feedback loop from “community to technology” in the figure below (Figure 2.3) shows the current paradigm in detail. Seltzer explains, “The current paradigm suggests that achieving sustainability is primarily a technical problem. In

other words, if we do the same things we are doing now, only greener and more efficiently, we will be sustainable, not have to change too much, and can move on to the next crisis. With better technology we will engineer our way out of this mess because we have done so before” (Seltzer et al. 2010).

FIGURE 2.3 – Current Paradigm (Detail)

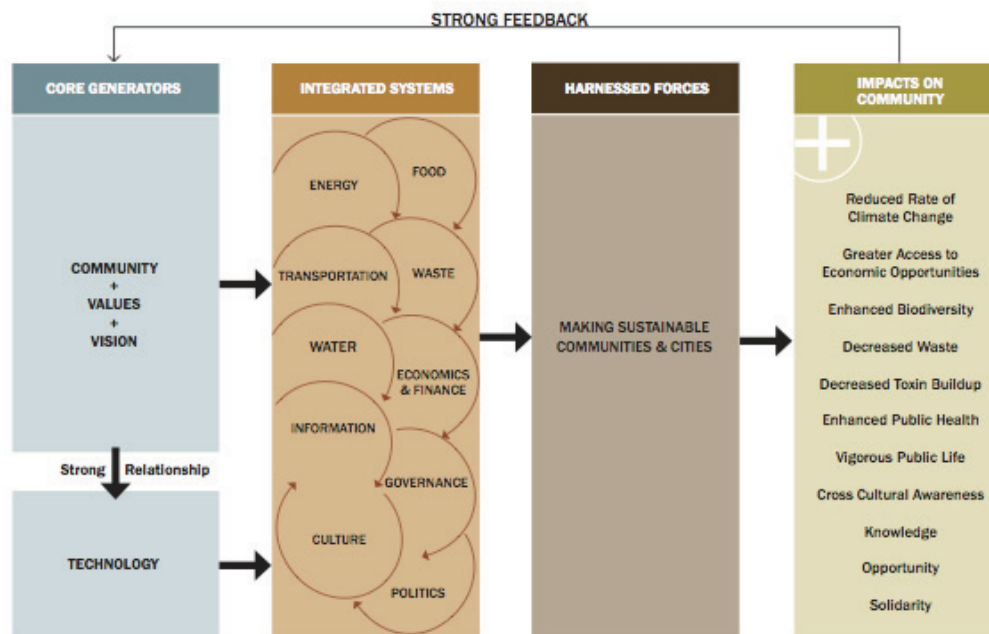


(Source: Seltzer et al. 2010)

Drawing from Thomas Princen’s suggestion that sufficiency should be the driving force of society rather than efficiency (Princen 2005), Seltzer argues further, “A paradigm shift towards the sufficiency side of the continuum would demand public discussions among government, private sector, and civil society about limits to growth and long-term ecosystem health that would help identify shared community

values as a basis for action” (Seltzer et al. 2010). The figure below (Figure 2.4) helps to illustrate what this new civic ecology paradigm would look like:

FIGURE 2.4 – Civic Ecology Paradigm (Detail)



(Source: Seltzer et al. 2010)

This new model of civic ecology places emphasis on community values and vision as the driving forces to determine efficiency and sufficiency in unison. It begs for a community forum where goals are debated and discussed, but where all voices are equally respected and heard. EcoDistricts, according to PoSI, can be the vehicle that challenges the current economic paradigm and moves community members from consumption of expert-driven technology-based sustainability to citizens that are

engaged in the production and management their own sustainable community (Seltzer 2010).

As demonstrated in the image below (Figure 2.5), PoSI relies on visual images to capture the essence of ecodistricts. The image shows a central hub for multiple modes and interaction, a diversity of people and generations, fresh food and greenery. These are things that are hard to capture in a theoretical model, but that are very valuable components of why ecodistricts can be desirable places to live.

FIGURE 2.5 – Components of a PoSI Ecodistrict



(Source: Portland Sustainability Institute 2011)

Innovation and Diffusion of Global Climate Change Policy

At the most basic level, ecodistricts are a response to greater pressure on legislators to be proactive in reducing the impacts of climate change (Harrison and Sundstrom 2007, Wiedner and Lutz 2008, Bicknell et al. 2009, UNECE 2011, US EPA 2011). In the last two decades, climate change has become an omnipresent issue for governments across the globe and the debate over what to do is coming to a head. For industrialized nations, greenhouse gas emissions targets are nearly impossible to realize at the speed required for real improvement. For developing nations, incentives to curtail emissions are scarce when the ultimate goal is to industrialize as quickly as possible. Therefore, the debate rages on about whether climate change policy should be developed as a global mandate or if it should be handled locally. Either way, it is impossible to ignore the impact the threat of climate change has had on global policy and local development. The nations discussed in this thesis are using the ecodistrict model of sustainable development as one method of local action to combat climate change.

As the theory of policy innovation and diffusion describes, genuine innovation is rare. This is because the uncertainty of new policy outcomes presents significant risks, making it challenging for the policy entrepreneur to find support at every level of government. However, when innovation does occur, good ideas are likely to diffuse to places facing similar issues (Sabatier 2007).

Global climate policy reflects the innovation and diffusion model because it is based on the idea that if everyone buys in, everyone will benefit. Therefore, it goes against a country's financial interests to innovate beyond what's already agreed to by other countries. Innovations in climate policy are born out of discussion at global conferences and then diffused across the globe. The national interaction diffusion model further explains that, as more and more countries interact with nations which have already adopted climate policies, the more likely they are to buy in or adopt a climate policy set of their own (Sabatier 2007).

The innovation and diffusion of the ecodistrict model as a method for reducing greenhouse gas emissions follows a similar pattern. In the last decade, solutions to suburban sprawl and urban design for smart growth have been pushed to the forefront of regional development issues. Transit-oriented design (TOD) was already being discussed as a way to design neighborhoods that promote social interaction, health and access urban resources (Cervero 2010). Good transit connections amidst dense development also provide an alternative to personal vehicle use and fewer cars on the road mean less greenhouse gasses released into the air. Countries like Germany and Sweden were among the first to implement ecodistricts as a tool for meeting emissions goals and other nations have since followed suit (Bicknell et al. 2009). Canada and now the United States agree that local action is key to reducing overall greenhouse gas emissions and are underway in testing the ecodistrict model as a method for doing so.

Urban Redevelopment in the United States

Regardless of site specifics, a development at the district scale can greatly impact a city's entire urban fabric. Later in this text, seven cases will be presented outlining different political contexts in which ecodistricts have been developed to illuminate the model's versatility. However, the United States has a particularly tormented history with urban redevelopment and one cannot discuss the concept of ecodistrict development stateside without acknowledging the socio-economic challenges that any large-scale urban revitalization project faces there (Dale and Newman 2009).

As Robert Weaver points out in two powerful essays on racial politics and the housing market, the American government, despite some good intention, has often implemented housing policies without full comprehension of the resulting negative effects (Weaver 1940, 1944). During the 1950s and 1960s, when urban renewal⁶ was in full swing, minority groups (blacks in particular) were subject to discrimination through the rampant use of imminent domain and redlining; the structural effects of which are still lingering today (Weaver 1940, 1994).

⁶ "Following World War II, and continuing into the early 1970s, "urban renewal" referred primarily to public efforts to revitalize aging and decaying inner cities, although some suburban communities undertook such projects as well. Including massive demolition, slum clearance, and rehabilitation, urban renewal proceeded initially from local and state legislation, which in Illinois included the Neighborhood Redevelopment Corporation Act of 1941 (amended in 1953), the Blighted Areas Redevelopment Act of 1947, the Relocation Act of 1947, and the Urban Community Conservation Act of 1953. The earliest emphasis was placed on slum clearance or "redevelopment," which was followed by a focused effort to conserve threatened but not yet deteriorated neighborhoods." (Chicago Historical Society 2005) [View Source](#)

Redlining⁷ delineated the black neighborhoods of inner cities across America and in addition to restricting access to financial services, negative social characteristics were falsely ascribed to those physical spaces. A form of district-scale apportionment, redlining helped to ingrain stigmas about the black population based only on where their homes were located on a map (Haynes and Hutchison 2008). According to Bruce Haynes, this system drives the cycle of discrimination, “the consequences of social isolation are used to justify the isolation” (Haynes 2011). Therefore, even though the development of an ecodistrict seems like a positive action from an environmental perspective, whenever an area is labeled and social values are associated, certain groups may be stigmatized or excluded.

More recently, urban sociologists have demonstrated that the revitalization of public housing into HOPE VI⁸ mixed-income housing (beginning in 1992) in conjunction with the Section 8⁹ voucher system perpetuates the spatial discrimination of minority races in U.S. cities (Oakley and Burchfield 2008). This phenomenon occurs because existing residents are not promised to be able to

⁷ Redlining is the practice of arbitrarily denying or limiting financial services to specific neighborhoods, generally because its residents are people of color or are poor” (Chicago Historical Society 2005). [View Source](#)

⁸ The HOPE VI Program was developed as a result of recommendations by National Commission on Severely Distressed Public Housing, which was charged with proposing a National Action Plan to eradicate severely distressed public housing. The Commission recommended revitalization in three general areas: physical improvements, management improvements, and social and community services to address resident needs. (HUD 2012) [View Source](#)

⁹ The housing choice voucher program is the federal government’s major program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market. Since housing assistance is provided on behalf of the family or individual, participants are able to find their own housing, including single-family homes, townhouses and apartments. The participant is free to choose any housing that meets the requirements of the program and is not limited to units located in subsidized housing projects.

return to the same housing site after renovation. Many existing public housing residents are instead given Section 8 vouchers to use in the open housing market, but due to the social stigma associated with the program there are very few housing opportunities to be had. Most voucher holders end up back in marginalized, racially segregated neighborhoods (Oakley and Burchfield 2008).

In 2002, Krysan and Farley discredit the theory that blacks prefer to live with other blacks, thus explaining why the real estate market appears to be segregated. Their research shows that blacks are willing to move into a white neighborhood as long as 50% of the families are also black. However, most American neighborhoods are not 50% black, which greatly limits the options and perpetuates a segregated market (Krysan and Farley 2002). Whites also have a much lower threshold for black families moving into historically white areas, which induces white flight over and over again as the black population shifts in and out of the city (Krysan and Farley 2002, Haynes 2011).

Ecodistricts do not create an inherently racial space and they are not intended to be a solution to public housing deficiencies, but they are subject to inequalities in the American housing market, which greatly impacts their ability to be socially equitable. If ecodistricts in the United States are to be accessible for all urban residents, these larger market dynamics need to be taken into account before the model is held up as the ultimate solution.

Logan and Molotch point to the growth machine driven by urban elites as one reason why large development projects tend to cater to those with wealth. They note that corporate and political interests are deeply imbedded in urban development projects because they bring a great deal of economic value to cities (Logan and Molotch 1984). Ecodistricts are specifically aligned with growth machine ideals because they provide a large number of housing units in a small space and the technologies they depend on are expensive and therefore cater to those who can afford them.

Another issue with urban development in the United States is that once a neighborhood has its amenities (ie. the ecodistrict is built), “Wealthier new residents have more political savvy than the old ones, and they use this to impose a protective NIMBY shield around the neighborhood” (Smith 2011). Urbanites are beginning to notice that increased amenities, such as transit-hubs, bike lanes and streetscape bulb-outs lead to gentrification. The battle between improved urban living environments and displacement is well summarized in an article about Bike Portland (a bicycle advocacy group based in Portland, Oregon).

“Changes to our streets are often the most visible signals of government power in most of our lives. As such, infrastructure decisions are inherently political, and those with greater resources have always held an advantage in seeing their wishes enshrined in concrete and pavement, or whatever the case may be. Improvements such as bike lanes increase the perceived “livability” of a neighborhood, serving as a sign to developers and housing speculators that a neighborhood is open for business. In this way, bike lanes

play at least an indirect role in making neighborhoods too expensive for low-income residents” (Davis 2011).

The realities of the housing market are important to consider when thinking about the impacts of ecodistrict development on America’s inner cities. Sustainable development is finding a home in the city, as brownfields and waterfront properties that have laid dormant or were forgotten for years are revamped (Dale and Newman 2009). Ecodistricts and the hype that follows them pose a real threat to communities that exist around the properties under development. Dale and Newman call to light that if buffers are not in place, displacement is inevitable (Dale and Newman 2009).

CHAPTER 3: METHODS

Statement of Focus

The environmental efficiency achieved through ecodistrict development is promising. Yet, at the same time blindly following the latest trend in redevelopment without careful consideration of the social impacts can prove to be disastrous. This thesis takes pause to examine aspects of social equity and how they are incorporated into current iterations of the ecodistrict model. If the socio-economic implications of large-scale redevelopment are not completely understood, urban planners run the risk of repeating mistakes that have previously resulted in discriminatory practices and from which they should have learned.

Ecodistricts are currently in development all over the world. In fact, recent economic upswings in Asia and the Middle East have provided for increased investment in environmental technologies at the district-scale and projects that could be considered ecodistricts. However, for this thesis, sites in Northern Europe were chosen for comparison with sites in North America for the following reasons:

- The ecodistrict concept began in Europe and the most recent academic publications refining the model have come out of the Portland Sustainability Institute in Portland, Oregon. Therefore, studying cases in each region allows for an understanding of the ecodistrict's evolution both in theory and practice.

- Despite cultural and legislative differences, the people of Germany, Sweden, Canada and the United States face similar issues. The majority population in each case is ethnically white, yet due to increased immigration, demographics are changing and requires an updated approach to urban development.
- Each country studied here appreciates the need to address climate change and has developed collaborative transportation and land use programs to do so. Ecodistricts are a valued component of such plans and therefore exist in each case for similar reasons.
- Each case self-identifies as a type of ecodistrict.
- The number of cases selected was manageable for the timeframe of this thesis.

Techniques

This thesis applies multiple methods (secondary data analysis of seven case studies, interviews with practitioners and qualitative observation of an ecodistrict resident meeting in Portland, OR) to explain the variations of ecodistrict models in practice and how they incorporate social equity principles. Research for this thesis was conducted in three stages. First, a review of published secondary information on selected ecodistrict sites was conducted to develop questions for further study. Second, visits to five of the case study sites were made over the summer (in Freiburg, Germany and Stockholm and Malmo, Sweden) and two more visits were

made in the fall quarter of 2012 (Vancouver, Canada and Portland, Oregon). At each study site, observations were made and interviews were conducted with planners or staff involved in the project when possible. Finally, additional demographic data (from 2000-2010) was requested from each case study contact to further develop an understanding of how ecodistrict development impacts income levels within its designated boundary and in comparison to the closest city center. The city of Malmo, Sweden was the only entity able to provide the requested data in the time frame required for inclusion.

During each interview, specific questions regarding resident diversity, housing affordability, community interaction, community decision-making and educational resources were asked (see Appendix B for a sample of the interview questionnaire). Those interviewed were selected because of their position as a planner, developer or employee of an ecodistrict studied for this research. In one case, the person interviewed also lived within the ecodistrict and was able to provide additional insight regarding community interaction.

This thesis employs four specific research techniques; the advantages and potential issues of which are outlined in the chart on the next page (Table 3.1).

TABLE 3.1 – Research Techniques

Problem	Approach	Technique	Advantages	Potential Issues
To find out how people behave in public	Watch and engage with them	Participant observation	Personal enjoyment, direct access at a close range, deeper understanding	Less systematic, high stress, less reliable results, reactive effects from being observed
To learn what people think	Ask them	Semi-structured interview	Useful when observation opportunities are limited, understand complex topics, produces manifest and latent content	Conversation, setting and question order varies with each interview, inaccurate data due to socially acceptable responses, over/under estimation
To find patterns in written or visual material	Systematic tabulation	Content analysis	Comparison of trends over time, easiest to replicate results, applicable to all types of material	Inaccurate measurement categories, doesn't explain "why" something is the way it is, restricted to published materials and the bias within them
To understand an unusual event	Detailed and lengthy investigation	Case study	No opportunity for a controlled experiment, holistic, holds reader interest, better when used with other methods	Outlier cases can cloud data (case selection is important), generalization is limited, difficult to repeat

(Source: Sommer and Sommer 2002)

Position and Bias

Every technique for gathering data has shortcomings, which is why a multiple methods approach can provide a more comprehensive answer to research questions (Sommer and Sommer 2002). Still, each method presents certain biases, which should be acknowledged individually.

Secondary data sources don't always reflect the realities of the outside world.

Written material cannot exist without some influence from its writer (Sommer and Sommer 2002). The documents studied for this thesis are particularly challenging

due to translation requirements and because many resources are marketing materials published by the developers of the ecodistricts themselves. Each publication must be read with the understanding that the benefits and achievements of ecodistrict development may be exaggerated.

Data gathering through human interaction creates additional bias. Introductions were made to each interviewee explaining the nature of this thesis and its purpose. However, as a young, American researcher primarily asking questions to foreign professionals, one cannot expect that every answer reflected the total truth.

Interviewees may have felt they needed to respond in socially acceptable ways or in a way that would promote their project or place of employment. However, many of the interviewees did express what seemed to be honest opinions about social equity, despite the sensitivity of the topic.

Additionally, all researchers bring a certain amount of bias to their work, as they are genuinely invested in the topics they pursue. A general interest in sustainable design and in the prosperity of American cities could lead to results that, even without intention, reflect such sentiments. Great care was taken to present this research project in a neutral light, so that interviewees would not feel threatened or encouraged by what the findings might reveal.

Strengths

The mixed methods approach used in this thesis allows for the most comprehensive analysis possible given the limited time frame. The diversity of cases provides a reliable summary of the most prevalent ecodistrict sites, but hopefully also inspires further research on ecodistrict projects in other areas of the world.

The use of participant observation at the Gateway Ecodistrict community meeting allowed me to see beyond the theory of Portland's five ecodistrict pilots. While the PoSI model is solid and the intentions of active community members positive, it was clear that some resident groups were nonetheless left out of the conversation and could potentially be harmed by the plans discussed. My understanding of how social equity plays out in real communities was redefined after this experience.

Furthermore, after attending the Ecodistrict Summit, hosted by PoSI in September 2011, it became clear that discussion of social equity and ecodistrict development is very timely. I am confident that this thesis contributes to a discourse in which practitioners are engaged and interested in mastering.

Limitations

This research covers seven ecodistrict case studies across four countries and two continents. While the variety of the case studies provide for a solid, general understanding of ecodistricts worldwide, more depth could be reached with fewer

sites. Additionally, much of the data collection was done while traveling on a tight schedule. Organizing interviews during what was summer vacation for many city personnel in Europe was also challenging.

One interviewee, who was speaking on behalf of both ecodistricts in Freiburg, Germany, spoke very little English. He was patient and did explain several complex ideas, but had a translator been present the data collected might have been richer. Language was also a barrier when requesting detailed demographic data over the phone from the United States. The interviews conducted in Europe informed the need for collecting additional demographic data, and had the data been requested at the interview rather than in retrospect, more resources may have been available.

Ideally, more interviews with residents could have been done. Much was learned from talking with planners and managers of ecodistricts, but that is only half of the story. More comprehensive surveying of actual residents would be a great way to continue this project.

Furthermore, despite the City of Portland's innovations on the ecodistrict model, none of the planned projects there have been implemented yet. All five districts are still in the organizing and assessment phase, which makes it difficult to draw true comparisons to the achievements of established ecodistricts.

Finally, while an understanding of the racial bias embedded in each case study's housing market is fundamental to measuring equal access to ecodistrict housing, a complete analysis of this aspect was not within the purview of this thesis.

CHAPTER 4: DATA ANALYSIS

Overview

Each of the seven case studies in this section begins with a short summary of the history and characteristics that are unique to that ecodistrict. Then, personal observations from visits to each ecodistrict are described. Finally, significant interviewee comments relating to social equity are highlighted and further analyzed using a social equity index and comparison table. When possible, demographic data is included to support findings from interviews and observations.

Vauban (Freiburg, Germany)

Located on the southern edge of Freiburg, the Vauban ecodistrict sits on former French military barracks bought by the City of Freiburg from the German National Government in 1992 for two million Euros. Ideas for developing the neighborhood were cultivated in 1993 and the detailed plans for Vauban were completed between 1997 and 1999. Phased construction of the neighborhood began in 2000, with the third and final phase completed in 2006 (Scheurer and Newman 2009).

City planners of Freiburg developed a master plan for Vauban through a series of urban design competitions and citizen engagement processes. Once the master plan was finalized (see Appendix L for map), the land was divided into individual lots that were put up for sale to individual co-operative groups and a few commercial builders. The objective of Vauban was to create a new neighborhood that would be

based on decreased reliance upon personal automobiles and low energy use principles (Scheurer and Newman 2009). Citizen participation was emphasized throughout the process by adopting Forum Vauban, a citizens' association as a legal entity of the City of Freiburg. Vauban's leadership went beyond the legal requirement to engage the public in every stage of the planning and development process (Scheurer and Newman 2009).



Main square and community center

The comprehensive plan for Vauban called for the creation of housing for 5,000 residents and the space for 600 jobs (Scheurer and Newman 2009). The plan prohibited detached housing and buildings exceeding four stories to ensure a compact urban area. Each small plot of land was sold to varying co-operatives or private builders, creating a diversified aesthetic. The small lots of housing are arranged linearly from the main train line to create a district of short walking distances. The brightly colored residential buildings line U-shaped streets with

green patches in between each building (Scheurer and Newman 2009). The green spaces provide community areas for residents to garden, gather or play.



Streetscape and building density in Vauban

The main street of the district hosts a light rail line connecting Vauban to the Freiburg's city center. Great emphasis has been put on making Vauban a car-reduced district; therefore excellent public transit links were planned from the beginning (Broaddus 2010). The streets within Vauban are shared spaces for vehicles, bicycles and pedestrians. Parking is not allowed on private property or along the streets, and is only available in two garages outside of the district. However, temporary unloading and loading is allowed outside of residences (Broaddus 2010). Residents who wish to own a car must buy a parking space at about 25,000 Euros (plus annual property taxes) (Broaddus 2010). Therefore, those who do not want to own a car do not have to subsidize the parking spaces for those

who do. For these reasons, car sharing is a popular mode of travel among Vauban residents (Broaddus 2010).

The energy efficiency standards, coupled with the automobile regulations, make Vauban an exceptionally sustainable neighborhood. Within the district, 65% of the primary energy and hot water for the district comes from the co-generation plant that runs on wood-chips and natural gas (Scheurer and Newman 2009). Solar collectors and photovoltaic systems supplement the remaining energy needs. All units in the district must meet low energy standards of 65 kWh/m² per year (Scheurer and Newman 2009). The fifty passive houses¹⁰ and approximately 100 energy-positive units located in the neighboring “solar village” use approximately 80% less energy over the year due to orientation, triple glazing of windows, and greater insulation of buildings (Scheurer and Newman 2009).

¹⁰ A Passive House is a “very well-insulated, virtually air-tight building that is primarily heated by passive solar gain and by internal gains from people, electrical equipment, etc. Energy losses are minimized. Any remaining heat demand is provided by an extremely small source.” (Passive House Institute US) [View Source](#)



Solar Village next to Vauban

Upon entering Vauban, it is immediately clear that the community originally catered to residents of all types. The first cluster of housing one sees is 20-30 run-down automobiles and campers claimed by squatters. According to Thomas Fabian, Planner for the City of Freiburg, squatter's rights are a hotly contested topic; everyone in Freiburg has an opinion about whether or not they should be permitted to stay.



Entrance to Vauban

The squatter's camp developed in the 1980s as an offshoot of the Independent Settler's Movement, a group of left-wing activists who rightfully bought and live in four historic military barracks at the edge of Vauban. These buildings were not renovated as Vauban was built and there was no intention to do so, but now that Vauban has gained so much notoriety around the globe, many are calling for their removal (or at least beautification) (Fabian 2011). Despite the tension, during my research visit the squatters were still living peaceably in their makeshift camp. However, upon returning to the United States, I received word that the City of Freiburg had finally demanded that they go elsewhere, and they did.



Former squatters camp at Vauban

One of the reasons Vauban thrives as an ecodistrict is because Freiburg is the birthplace of Germany's green party. The entire City of Freiburg has been a cradle of environmentalism since the 1960s, making the local political climate ripe for ecodistrict style development (Broadus 2010). Residents were eager to support a project of this nature and already possessed enough environmental education to ensure that Vauban would be a success. Residents themselves drive much of the focus on green initiatives within the district. The town square at the center of the district is consistently alive with a bi-weekly farmer's market and other community events. There are some eco-oriented educational and service providers in the district center as well, yet most residents know how to live green from personal experience elsewhere (Fabian 2011).

One of the most interesting outcomes of Vauban is a new real estate industry sector of Baugruppe brokers. A Baugruppe is a collective of up to thirty families that was able to purchase a small parcel in Vauban directly from the city. The Baugruppe then chooses their own architect who will design each family unit to the group's specifications. This model is unique because it cuts out the middleman (the developer), and it effortlessly provides for a thoughtful and diverse building style throughout the district. Meeting the needs of thirty families in one building can be a complex job, which is why a new crop of Baugruppe brokers has sprouted to help mediate between requests and realities (Fabian 2011).



Housing diversity due to Baugruppe model

The City of Freiburg traditionally follows a strict zoning code, but it took a relaxed approach when developing Vauban. Certain rules still had to be followed (for example, buildings were required to tie into the district energy plant), but for the

most part architects had complete freedom. Wulf Daseking, the city's Director of Planning for over thirty years (who has become somewhat of an international celebrity), feels that Freiburg's success with urban design can be attributed to the "continuity of his vision" (Daseking 2011). His sentiment may be self-congratulatory, but there is great value in working towards innovative, yet unified goals, as Vauban exemplifies.

Another important characteristic of Vauban is that despite its eclectic appearance and use of the Baugruppe development model, the 10% low-income rental housing is still developer owned and relegated to the far edges of the district. According to Fabian, who is also a resident of Vauban himself, the different income classes don't mix within the district at all. Baugruppe properties were too expensive for lower-income families to participate in the program. As Fabian describes, "you can easily tell that the Baugruppe homes were made with love and that the others weren't" (Fabian 2011).



Rental housing at the edge of Vauban

Rieselfeld (Freiburg, Germany)

The Rieselfeld district is located on the west side of Freiburg. Planning of the Rieselfeld project began in 1991, and development of the first stage of housing began in 1994 (RPG 2009). Rieselfeld is designed to serve residents, especially young families, through provision of affordable housing, local services, access to green space and walkable neighborhoods linked to public transportation.

Additionally, the district promotes environmental stewardship through decreased reliance upon personal automobiles, use of renewable energy with sustainable design, and high-density housing (RPG 2009). When all development is completed, an estimated 10,000 to 11,000 residents will live in Rieselfeld (RPG 2009) (see Appendix K for map).



Athletic center under a grassy hill in downtown Rieselfeld

Prior to the development of Rieselfeld, the land was used as a sewage plant and sewer filter system for Freiburg. The name, “Rieselfeld,” translates to “sewage farm” (RPG 2009). The Rieselfeld district sits on a total of 791 acres owned by the city. Only 173 acres are used for housing and infrastructure, while the remaining acreage is set aside as a nature reserve (RPG 2009).

The general land use plan for Rieselfeld focuses dense development in the center of the district along a main street carrying the streetcar rail. The housing density decreases as one moves farther away from the center (Broaddus 2010). Circulation for the district includes a network of pedestrian and bicycle access paths, as well as traffic-calmed streets for automobiles (Broaddus 2010). Blocks in the district were divided into multiple lots so that many investors could purchase and develop land.

Private developers are required to abide by specified density requirements but size and style of units vary greatly.



Green street car tracks through the center of Rieselfeld

Though there are some car-restricted streets, personal automobiles have access to most roads in Rieselfeld. However, the speed limit is quite low at a maximum of 30 km per hour (Broaddus 2010). With no more than one parking space per unit, and shared, slow streets, the district promotes multi-modal transport by design (Broaddus 2010). From Rieselfeld, it only takes about fifteen minutes to reach Freiburg's city center by streetcar.



Street sign showing multiple uses are allowed

Aside from housing density, the orientation of built structures was designed to minimize energy use. Rieselfeld planning guidelines specify that energy consumption must fall below 65 kWh/m² per year (RPG 2009). All structures within Rieselfeld are required to connect to a district heating system that is powered by a co-generation plant. Buildings in Rieselfeld aim to reduce greenhouse gas emissions by 50% of a traditionally constructed building (RPG 2009).

The Rieselfeld district has more rental housing than Vauban and 20% of the units are affordable. The City of Freiburg has struggled with providing adequate low-income housing in the past, mainly because it can legally require inclusionary units only on land owned by the city. In the 1980s, when ideas for Vauban and Rieselfeld were discussed, a major motivation for the projects was the

potential to create a large number of affordable units. However, Daseking explains, “You can’t just bring in any old junkie off the street. Residents for mixed-income living need to be carefully selected” (Daseking 2011).

The city has been deliberate about suggesting places for new businesses to locate. The economic development staff works closely to match the incoming business model to the right market and space. This extra attention has helped to create a thriving commercial spine in the Rieselfeld district. Residents can take transit into the main city, but don’t have to leave the district for most of their needs.



Main square and library at Rieselfeld

Rieselfeld is also home to a unique religious institution. Both Catholic and Protestant congregations occupy the same church facility off of the main square. There is a dividing wall between their spaces inside, but it can easily be removed at times they want to be together.



Multi-denominational church at Rieselfeld

Hammarby Sjostad (Stockholm, Sweden)

Hammarby Sjostad is an impressive, mixed-use residential and business development district located on a 200-hectare site at the edge of the Södermalm district of Stockholm, Sweden. Utilizing an innovative, closed-loop system of managing energy, waste and water, referred to as the “Hammarby model,” as well as making an overt effort to educate residents on how to live sustainably, Hammarby Sjostad has earned global notoriety for its holistic approach (Gaffney et al. 2007, GlashusEtt 2007). The Hammarby model decreases the use of water and energy in this district by an estimated 50% compared to conventionally constructed buildings (GlashusEtt 2007).



Main square of Hammarby Sjostad

Hammarby Sjostad is located on a remediated brownfield site along the Lake Hammarby waterfront that was previously used for heavy industry. The City of Stockholm encouraged the development of Hammarby Sjostad to be kept within existing city boundaries, in accordance with their official goal of “building inwards” (Gaffney et al. 2007). As such, Hammarby Sjostad is accessible by several modes of transportation, and located south of the city center, is only a fifteen-minute streetcar ride to central Stockholm. The district’s design invites pedestrian and bicycle access while limiting auto access (see Appendix L for map).

Though there is a master plan for the development, several commercial developers have influence over the physical design of each of the twelve sub-districts within Hammarby Sjostad. While planning for the development began in 1996 and the first

residents moved in during 2001, construction within Hammarby Sjostad will likely continue until 2017 (Gaffney et al. 2007).

Developments in Hammarby Sjostad must meet an energy efficiency standard of 60 kWh/m² per year (GlashusEtt 2007). Given that Stockholm endures a cold, long and dark winter, it is no surprise that heating is the largest source of electricity consumption in Hammarby Sjostad. Hammarby Sjostad residences are tied to a district heating system. After heat is removed from purified wastewater, the cool water is fed into a district cooling system used for refrigerator and freezer storage in grocery stores, and as a cooling system in-lieu of traditional air-conditioning systems (Gaffney et al. 2007).



Vacuum-powered waste collection outside every building

Reportedly, social integration was an original goal of the projects in the 1990s, but this goal is not articulated in current planning documents and is not reflected in resident demographics. As a mixed-use development, other goals related to housing-jobs balance and social benefits are implicit in Hammarby Sjostad. The seamless integration of residential and office spaces create job opportunities for residents. Encouraging non-auto modes of transportation also invites more social interaction among residents.

However, it is clear that Hammarby Sjostad is an exclusive community, available only to wealthy residents of Stockholm (Karlsson 2011). Gunnar Soderholm, Director of the Environment and Health Administration, City of Stockholm at the EcoDistrict Summit in 2011, who has extensive experience with the planning and implementation of Hammarby Sjostad said to me at the EcoDistricts Summit in 2011 without provocation, “The biggest issue with Hammarby is the lack of low-income housing.”



Grandfather and grandkids enjoying the gardens below their apartment

The ambitious sustainability goals of Hammarby Sjostad require ongoing education. A learning center named GlashusEtt (or the Glass House), along the center spine of the development, teaches residents and visitors about the renewable technology and systems used within the development. While Hammarby Sjostad is described as a sustainable development, it is necessary for the residents and businesses to use the technology appropriately to make this true. Educational programs for residents focus on many topics including: waste sorting, and use of biodegradable products to support water recycling. There is also special programming for children to help them understand proper recycling, energy and water use techniques at an early age (Karlsson 2011).



Education center at Hammarby Sjostad

According to Malena Karlsson, Education Director of the GlashusEtt, no specific events are planned to support resident interaction. The physical design of common areas encourages neighborly moments and the local church has some public programming, but for the most part, residents are on their own to form relationships within the district (Karlsson 2011).

Karlsson also shared that prior to Hammarby Sjostad's development a community of squatters lived on the site. They tried to organize to be permitted to stay, but lost, and were eventually relocated in the 1990s. In response to their displacement, the team behind Hammarby Sjostad designed a beautiful photo book that tells the story of the squatting community. One can buy the book at the GlashusEtt, although it is unclear where the proceeds go. At first glance, the book's publication may appear to be insensitive, but Karlsson explains that low-income people typically do not live in

Stockholm's city center and that no one really thought twice about asking the squatters to leave. She believes that Hammarby Sjostad is just meeting the demand for luxury housing and that Stockholm is better off for providing it.

Western Harbor (Malmo, Sweden)

Western Harbor is a 343-acre ecodistrict located on the water's edge of the city of Malmo in Sweden. During the 1970s, a recession in the ship building industry forced many of the area's large companies to move away. The land was left vacant for a period of time, but in 1998 construction on new ecodistrict plans began. The Bo01 area was the first section to be completed in 2001, just in time for the European Housing Expo (City of Malmo 2006). Development has continued since, section by section, with each new neighborhood improving on the areas built before it.

Western Harbor is also home to Malmo University, turning the ecodistrict into one of Sweden's largest learning centers (City of Malmo 2006).

FIGURE 4.1 – Western Harbor before redevelopment



(Source: Dalman 2002)

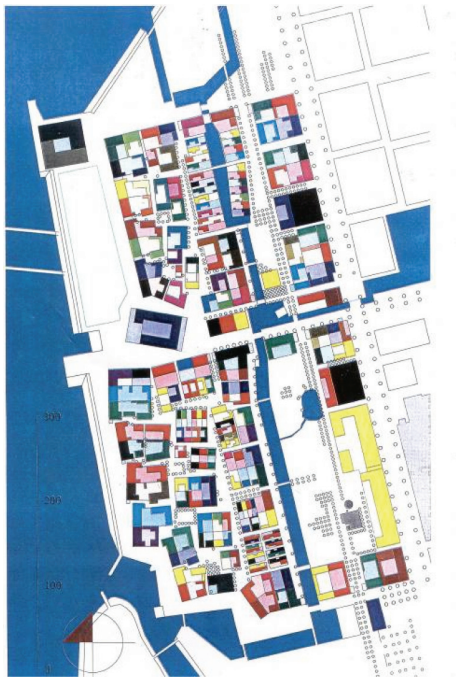
FIGURE 4.2 – Western Harbor today



(Source: Dalman 2002)

In Western Harbor, the green space is roughly 53% of the landscape. The “green area factor,” is a tool that can be used to measure the ecological effectiveness of a development. The City of Malmo sets minimum standards for what that factor has to be and the developer then has the freedom to implement any number of green features to reach (or exceed) the standard score. In the diagram below (Figure 4.3), each color indicates one of the 30 architects and 20 developers that worked on the project. This diversity of input helped to create a district with pockets of unique characteristics; each building has its own personality.

FIGURE 4.3 – Western Harbor (Bo01) Facility Diversity



(Source: Dalman 2002)

The vision for Western Harbor was to create a complete urban quarter including work facilities, housing and commercial services (see Appendix M for map).

Sustainability, density and intimacy were defining concepts for the plans, as well as reestablishing Malmo's connection to the sea (City of Malmo 2006). The city of Malmo has been recognized internationally for its environmental efforts and innovative approach to planning Western Harbor. Malmo continues its quest for environmental excellence pledging that by 2020, the entire city of Malmo will be climate neutral, and it will run on 100% renewable energy by 2030 (City of Malmo 2006).



Waterways through Western Harbor

Except for emergency vehicles and taxis, motor vehicle traffic is controlled to give priority to pedestrians and cyclists. Bus stops are located within 300 meters of any given block of units and buses run to the city's centre every seven minutes. A data

network installed on each block allows residents to view current bus schedules and, in the future, will be used to allow residents to reserve a biogas-fueled car or arrange for carpool trips. There is an abundance of cycle lanes and roughly one-fourth of the daily trips in Malmo are made by bicycle. Parking provided in the Bo01 area is mostly underground and just 0.7 cars per apartment, well below 1.1 for the rest of Malmo (City of Malmo 2006).

The energy system is sized for approximately 1,000 apartments and is built on a commitment to 100% renewable energy from local sources. The energy mix includes roof-mounted solar photovoltaic panels, a two mega-watt wind turbine, municipal waste incineration, and a ground-source heat pump station coupled with a groundwater aquifer heat-exchange system (City of Malmo 2006). Nine plants distribute heat to Western Harbor homes and workplaces. Heat is extracted from the sea and rock strata, and methane gas from local refuse and sewage, which, after being treated, is supplied to the district through the city's natural gas network. Energy use in homes must be less than 105 kWh/m² per year (City of Malmo 2006), a goal that is attainable through the use of green roofs to help buffer rainwater and act as a form of insulation in both winter and summer. Developers have gone to great lengths to combine different renewable energy technologies into one integrated system.

Both Hammarby Sjostad and Western Harbor are examples of the efficiencies that are possible when development and resources are directed to specific sites at the district scale. Each city works with a variety of stakeholders to achieve the goals of energy-efficient buildings, public transportation, an extensive biking infrastructure, and integrated waste management. These ecodistricts are very much a top-down approach to sustainable development; the cities own the land and have proactively decided to focus new housing development and transportation on specific parcels within the urban boundary.

While interviews were not conducted in Western Harbor, the city's planning department was able to provide income data to illustrate how median incomes in the district, the city center and in total have changed since Western Harbor was built.

In 2002, as Western Harbor was completed, the median annual household income distribution looked like this:

TABLE 4.1 – City of Malmo, Annual Median Household Income (2002)

Western Harbor	117,248 SEK
City Center	157,915 SEK
Malmo	168,046 SEK

(Source: City of Malmo 2011)

In 2009, the median annual household income within the Western Harbor district has more than doubled (a 132% increase), while the city center has only increased by 26% and the overall city by 22%.

TABLE 4.2 – City of Malmo, Annual Median Household Income (2009)

Western Harbor	272,820 SEK
City Center	199,646 SEK
Malmo	205,190 SEK

(Source: City of Malmo 2011)

Despite planners' claims that 70% of the district is affordable rental housing (Dalman 2002), these statistics indicate otherwise. Spending time within the district reinforces this sentiment; Western Harbor seems to primarily cater to a wealthy crowd.



Impressive skate park catering to Western Harbor teens

Augustenborg (Malmo, Sweden)

Not all ecodistricts in Sweden are master-planned new construction. Augustenborg, a community of 3,000 low- and very low-income residents at the edge of the city of Malmo, is an example of how ecodistricts can be built around existing structures. Plagued with crime and deteriorating facilities in Augustenborg, the Malmo housing authority needed to take action to improve the conditions. Rather than tear down the entire apartment complex and redevelop it fresh, they opted to invest in green infrastructure retrofits (Augustenborg 2011).

The results have been wildly successful and Augustenborg has since become a global leader in green roof design and care. Augustenborg's landscaping has been drastically updated to reflect the most current technologies in storm water management. Waste systems have also been revamped, and now the entire complex is involved in a competitive recycling and compost program. Energy systems were not as easy to update, but a 20% reduction in energy use has been achieved (Augustenborg 2011).



Green roofs at Augustenborg

The individual units stayed the same inside to avoid displacing residents, but because residents were educated one on one about the external environmental improvements, they became very eager to contribute in any way they could. Since the environmental retrofits, residents of Augustenborg have a renewed sense of pride in their homes and crime in the area has gone down (Augustenborg 2011).

Louise Lunderg, who curates the green roofs at Augustenborg, explains their success through a story about compost bins, “We delivered free counter-top compost bins to every unit, but no one was using them. We realized that counter space was precious and the bins were taking up too much room to be useful. So, we designed a wall-mounted holder and delivered them for free to every unit again. Still, no one was using the compost bins. We started going around unit-to-unit, offering to install the

bin holder and people obliged. While there, we discuss the benefits of composting and the procedures for doing so with each resident. The adoption rate skyrocketed” (Lundberg 2011). Lundberg’s story illustrates the importance of personal communication and relationship building between facility management and residents in order to achieve environmental goals.



Bio-swale retrofits to existing public housing

Southeast False Creek (Vancouver, Canada)

Built on former industrial lands, Southeast False Creek has expanded since the 2010 Olympics into a 32-hectare mixed-use ecodistrict. The plans boast 26 acres of park, habitat and urban agriculture lands and a housing density of 100 units per acre. The guiding principles for development were: dense development in an urban setting,

improved ecological health, resource conservation, economic vitality and a vibrant and livable community (City of Vancouver 2005). Seemingly, Southeast False Creek has achieved those goals and will eventually be home to nearly 12,000 people.

It was Vancouver's intention to develop Southeast False Creek in a way that mirrors the regional income mix (City of Vancouver 2005). Thirty-five percent of the homes in Southeast False Creek will be designed for family living, an effort to keep young families comfortable in an urban setting for a long time. Of the 564 total housing units, 30% were supposed to be affordable housing with 30% mid-market units and the rest sold at market-rate (City of Vancouver 2005). This equally distributed, three-tiered pricing strategy aimed to ensure a balanced, accessible community with a broad social mix. Unfortunately, the 30-30-30 plan was eliminated by city council when development costs got too high. Affordable housing units were reduced to 20%, which is normal for the rest of Vancouver (Pask 2011). As for job creation, nothing significant has developed in the district. Aside from construction jobs and a few retail sites, it's mostly residential.

Dale and Newman describe the circumstances as of 2009: "Approximately 25,000 units of new market housing have been built on the north side of False Creek, almost all self-owned and often sublet" (Dale and Newman 2009). These units, even when available for rent, are far beyond the reach of low-income people living around them in squalid conditions. But even if such places were financially accessible, it is

unreasonable to expect that people coming out of dire poverty could easily make their homes in them (Dale and Newman 2009).

Connected to the airport and the central city via a rapid transit rail line, Southeast False Creek is highly accessible for all modes (City of Vancouver 2005). Streetcars, buses and a ferry service the area, and connections to greenways and bikeways are present as well. Ideally, one could shop, live and work all within a 5 to 10 minute walk. Nearly 60% of daily trips by False Creek residents use non-auto modes (City of Vancouver 2005). To encourage this, some Vancouver banks offer location-based mortgage credits for those who choose to live close to public transit, with False Creek being a prime location (City of Vancouver 2005). Automobile use is further deterred through well-designed, multi-modal infrastructure and series of tax, policy and employer incentives (City of Vancouver 2005).

The False Creek Energy Centre, located within the district, combines the management of wastewater and energy production to provide residents with a 100% renewable energy source (City of Vancouver 2007). The sewage pumping station recovers heat from untreated urban wastewater and pushes the generated energy out to the district. "On the coldest days of the year, NEU heat pumps are supplemented with high-efficiency natural gas boilers, which ensures reliability and competitive cost" (City of Vancouver 2007).

Clearly, Canada has been successful at following in Europe's footsteps when it comes to ecodistrict development. Focusing new urban development into highly efficient, closed-loop infrastructure districts, allows local leaders to improve urban landscapes while also contributing to climate goals. Southeast False Creek has been such a great example of this, that several new ecodistrict projects are being planned across the country (PoSI 2011).

Portland's Five Ecodistrict Pilot Plan

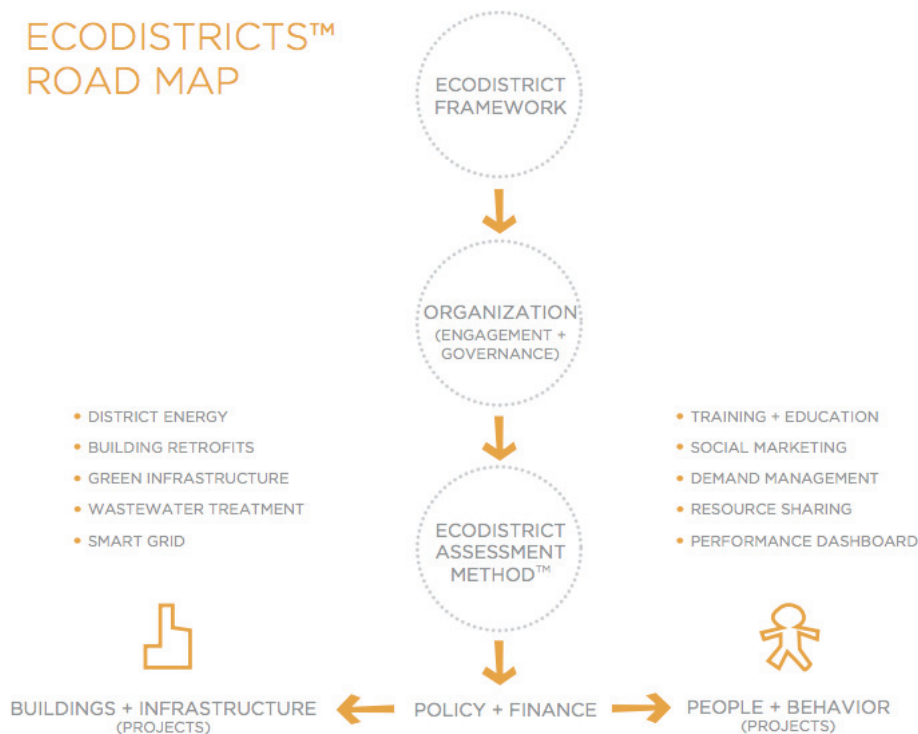
Created by outgoing mayor, Sam Adams, the Portland Sustainability Institute (PoSI) is leading development of five ecodistricts amongst Portland's existing neighborhoods. The five ecodistricts include: SOMA (Portland State University and the surrounding area), South Waterfront (a downtown, new construction, high-rise community along the Willamette River), Lloyd (a primarily commercial neighborhood in the Northeast part of the city), Foster Green (a diverse and economically challenged area, with a long history of community assistance and little improvement) and Gateway (an identity-less, transit-hub where over 77 different languages are spoken). Each of these districts has highly unique circumstances, but PoSI has developed an adaptable framework for ecodistrict development that will guide the overall process (PoSI 2011).

FIGURE 4.4 – PoSI's Five Ecodistrict Pilots



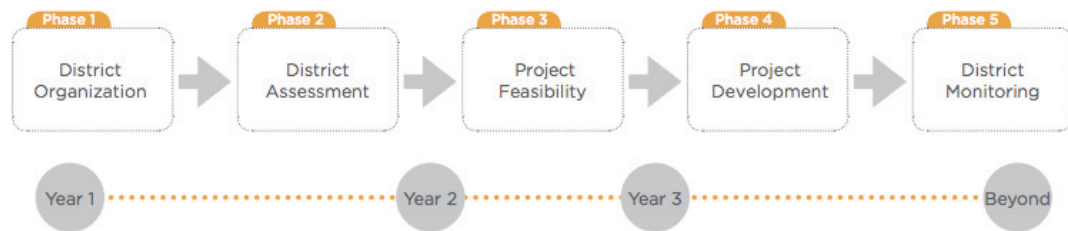
(Source: Portland Sustainability Institute 2011)

Below is a diagram (Figure 4.5) of how PoSI put their model into action. They first worked with academics, economists and urban designers to draft a white paper that draws heavily on civic ecology theory and outlines the framework they used to create the five pilot projects in Portland. Then, they carefully selected a president for the steering committee of each district. In some cases the president selected had a previous relationship with PoSI or the City of Portland, but in others an engaged community member was chosen. Two of the districts have undergone the third step which is an assessment process designed by PoSI to generate a list of feasible greening projects. Once the steering committee determines its priorities, PoSI assists them in finding financing that will cover both the infrastructure (hard) and social (soft) aspects of their goals (PoSI 2011).

FIGURE 4.5 – PoSI Ecodistricts Framework

(Source: Portland Sustainability Institute 2011)

The PoSI ecodistrict development process consists of five phases (Figure 4.6): district organization, district assessment, project feasibility, project development and district monitoring and is driven by the civic ecology framework described in the literature review.

FIGURE 4.6 – PoSI Ecodistrict Development Process

(Source: Portland Sustainability Institute 2011)

At each phase of the implementation process, nine performance areas are considered to make sure that plans are in line with the ideals behind the pilot program: equitable development, place making, social cohesion, energy, air quality and carbon, access and mobility, water, habitat and ecosystem function and materials management (PoSI 2011). Even though it is too early to qualify the framework's success, as more cities become familiar with the ecodistrict concept (through their annual summit or otherwise), the PoSI model is being referenced and adopted all over the world (PoSI 2011).

The measurement criteria most relevant to this thesis are equitable development, access to decision-making and social cohesion. PoSI suggests that access to decision-making and social cohesion fall under a broader “community identity” category. Equitable development is defined and measured by the criteria on the following page (Figure 4.7).

FIGURE 4.7 – PoSI Metrics: Equitable Development

Objectives

1. Ensure neighborhood investments provide direct community benefit through job creation and investment opportunities
2. Provide quality and consistent local job opportunities through EcoDistrict projects
3. Mitigate the forced displacement of existing residents and businesses
4. Ensure diverse stakeholder involvement in all EcoDistrict activities and decision making

Potential Measures of Success²

- Diversity Index: Reports the percentage of time two randomly selected people differ by race/ethnicity
- Income Distribution: Measures distribution across five income brackets in a geographic area
- Dissimilarity Index: Measures whether a particular group is distributed across census tracts in the city in the same way as another group
- Percentage of Community Members that are Self-Sufficient: Measures whether an income is sufficient to meet the basic needs of most adults including the cost of housing, childcare, food, healthcare and transportation
- Displacement: Measures whether residents or businesses will be relocated or displaced as a result of new project development

(Source: Portland Sustainability Institute 2011)

Community identity is defined and measured by (Figure 4.8):

FIGURE 4.8 – PoSI Metrics: Community Identity

Objectives

1. Create beautiful, accessible and safe places that promote interaction and access
2. Foster social networks that are inclusive, flexible and cohesive
3. Develop local governance with the leadership and capacity to act on behalf of the neighborhood

Potential Measures of Success⁵

- Percent Satisfied with Neighborhood: Measures resident satisfaction with quality of their community
- Walking Distance from Cultural Institutions: Measures number of residents within a half mile walking distance to a cultural institution
- Quality and Appearance of Building Stock: Measures the variety of building stock for a more pleasing pedestrian experience
- Quality of Parks and Public Spaces: Measures the quality of public spaces as a value to the neighborhood identity
- Quality of Pedestrian-Scaled Streetscape: Measures how well the streetscape enhances or detracts from the pedestrian experience
- Mix of Desirable Land Uses: Measures the integration of different, compatible land uses
- Commercial Lease/Vacancy Rates: Measure vitality of neighborhood businesses
- Walkability Access: Measures the percentage of residents who live within a half mile of sidewalk-accessible complete neighborhoods
- Accountability in Decision Making: Measures the opportunity for community input in the decision making process
- Diversity of Stakeholder Engagement: Measures the type of outreach and the populations reached out to for stakeholder involvement

(Source: Portland Sustainability Institute 2011)

Unlike the European ecodistricts discussed in this paper, Portland is attempting to enhance existing communities. Only the South Waterfront district has undeveloped land that can be master-planned; the other districts will have to creatively harness existing resources when adding features and systems. Each ecodistrict was chosen to coincide with one of the Portland Development Corporation Urban Renewal Areas (PoSI 2011). The matches were deliberately designed to benefit from tax increment financing opportunities already in those areas. PoSI has also produced an extensive report on financing tools for each phase of ecodistrict development.

PoSI is very hands-on with helping to organize and train each district's leadership team to develop a governance structure from scratch (PoSI 2011). According to PoSI, keeping these leadership teams engaged and employed is fundamental to ecodistrict success (PoSI 2011). It is clear though, that not all of the leadership teams have experience in organizing across income and racial barriers (Cole 2011). It remains to be seen if the projects selected as ecodistrict components in the future will truly represent the communities they are intended to.

Closed-loop energy and other infrastructure improvements seem less integral to what Portland is trying to accomplish (PoSI 2011). The SOMA district already supports Portland State University with steam-powered district energy. The system is being considered for expansion, but no concrete plans are on the table yet (PoSI 2011). The Lloyd ecodistrict has been selected for a feasibility study on district

energy, but the district's leadership team will not manage the implementation (PoSI 2011). It is a complimentary project that the Lloyd ecodistrict will get to benefit from.

Each of Portland's ecodistricts is already highly accessible by public transportation. Therefore, transit improvements while being considered, are not taking center-stage. In fact, the Gateway district is focused reshaping its identity as a transit way station into a destination neighborhood. Gateway wants to attract people off the trains and into their business districts.

Both examples from the United States indicate that the ecodistrict model is evolving as it diffuses from Europe through Canada to the United States. The ecodistrict style of development helps local governments take real and lasting action towards meeting emissions goals. To understand how and why the ecodistrict model is becoming the preferred method of sustainable development worldwide, the application of policy theory is useful.

Gateway Ecodistrict Community Meeting

The Gateway ecodistrict is the farthest along of the five pilot districts in terms of governance and organization. This is interesting because Gateway is one of the two historically marginalized areas that PoSI chose to include. Gateway was not originally considered to be good ecodistrict candidate (despite that fact that it was

already a major transportation hub), but leaders from the area presented PoSI with a few projects they had in mind and more or less bargained their way into becoming the fifth pilot site (Gifford 2011).

I was fortunate enough to be invited to participate in a community workshop hosted by the Gateway Ecodistrict Steering Committee. The committee's president, Colleen Gifford, is a long time Gateway resident and owns a local sustainability consulting practice. Gifford was very welcoming to me and other interested outsiders and exhibits a strong passion for neighborhood organizing. Gateway, in general, has several community action groups and at the ecodistrict meeting it was clear that the active membership overlapped in many cases.

Historically overlooked, Gateway's selection as an ecodistrict has subsequently catapulted the area to the top of Portland's priority list. This community meeting was called to discuss organizing tactics that will support resident interests. However, much of the conversation focused on re-branding Gateway's identity in order to ignite economic development within the district.

Meeting participants recognized the need to conduct further outreach amongst the non-English speaking communities in Gateway, but had little direction for how to do so. Aside from re-branding, the discussion focused on project development and funding sources. Most people seemed interested in a weatherization campaign for

seniors and more work on parks in the area. These priorities counter a report produced by Portland State University stating that residents are most concerned with job creation and safety (DistrictLab 2010).

Separate from the community meeting, initial greening projects (Figure 4.10) have already been suggested for Gateway using the PoSI project assessment method (Figure 4.9).

FIGURE 4.9 – PoSI Project Assessment Method

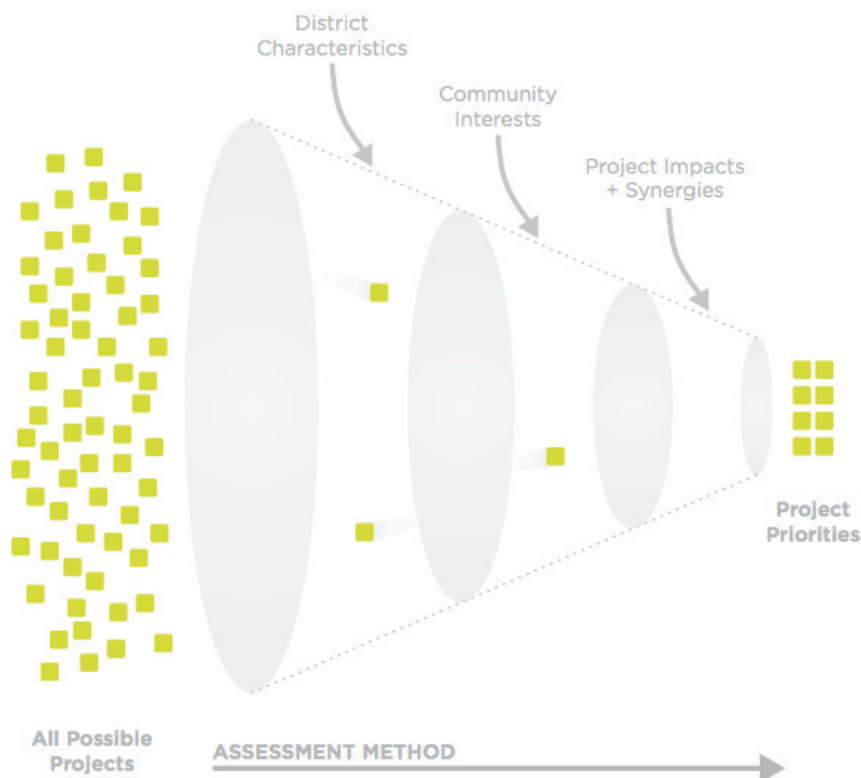


FIGURE 4.10 – Gateway EcoDistrict Initial Projects

(Source: Pilot Report: Gateway EcoDistrict Development 2011)

Social Equity Index

In order to better understand the differences and similarities between each of the cases presented in this thesis, a five-point scale is used in the following table to rate each ecodistrict for its implementation of the following social equity principles

(Table 4.3):

- Resident Diversity
- Housing Affordability
- Access to decision making
- Educational resources
- Community interaction

TABLE 4.3 – Social Equity Index

	Vauban Freiburg, Germany	Rieselfeld Freiburg, Germany	Hammarby Sjostad Stockholm, Sweden	Western Harbor Malmo, Sweden	Augustenborg Malmo, Sweden	Southeast False Creek Vancouver, Canada	Gateway Ecodistrict Portland, OR
<i>Resident Diversity</i>	3	2	2	2	4	2	5
<i>Housing Affordability</i>	3	3	2	2	5	3	4
<i>Access to decision making</i>	4	3	2	2	4	2	5
<i>Educational resources</i>	3	3	5	-	5	2	4
<i>Community interaction</i>	4	4	3	-	4	3	4
Total score	17	15	14	-	22	11	22

Rating scale:

- 5 – Excellent implementation of this category*
- 4 – Fair implementation of this category*
- 3 – Neutral implementation of this category*
- 2 – Poor implementation of this category*
- 1 – No implementation of this category*
- (-) – Not enough data/further research needed*

Both Augustenborg and the Gateway ecodistrict in Portland, OR scored the highest social equity rating while Southeast False Creek in Vancouver, Canada scored the lowest. However, that does not mean that each of those districts scored highest or lowest across all five social equity categories. The variation in scores by topic indicates that each ecodistrict brings something unique to the table. In the recommendations section, I will highlight the best practices I have observed through this research that hopefully can be integrated into one complete model for future developments.

Vauban scored highly in access to decision-making and resident interaction, mainly due to its proactive formation of the resident group Forum Vauban and its utilization of the cooperative Baugruppe model for housing development. Many of Vauban's residents are very engaged with the community, but it did not score the highest rank in this category due to a lack of interaction between Baugruppe homeowners and renters.

Similarly, the design of Rieselfeld and its successful incorporation of multiple, traditionally combative religious organizations foster a very interactive, giving Rieselfeld a high score in that category. However, there is no formal community advocacy group in Rieselfeld, which earned the district a lower score in access to decision-making. In both Vauban and Rieselfeld, housing affordability and resident diversity could be improved. Vauban is home to a slightly more diverse population, but with the removal of the squatter's camp, it is unclear if that diversity will be protected as the district evolves.

Hammarby Sjostad scored very low in most index categories, but scored highest in educational resources. The on-site location of the Glashuset is a significant feature of the district that helps the community to thrive and live as sustainably as possible. Additionally, Hammarby Sjostad outperforms the high scorers on the social equity index, Augustenborg and Gateway, in technical environmental efficiency. Therefore,

an ecodistrict model that takes the best of all three examples would be ideal going forward.

There isn't enough data available to comment in depth on social equity within Western Harbor, other than to use it as a demonstration of the drastic rise in income levels an ecodistrict can incite. Western Harbor also has one feature that no other ecodistrict has, a world-class skate park designed specifically for teens. The presence of the skate park is a good reminder to think about *all* members of the community when designing public spaces.

Had Southeast False Creek followed its 30-30-30 plan, it would have scored very high in the housing affordability category. Unfortunately, as with many large development projects, the social equity parameters were cut first under a tight budget. It will be important to develop incentives that prevent this phenomenon in future scenarios.

Gateway and Augustenborg tied for the highest score on the social equity index, primarily due to their unique methods for engaging the residents in governance of their own environment. Augustenborg staff worked individually with existing residents to achieve sustainability goals and now residents are taking up their own initiatives and competing to see who can contribute the most to the district's success. Likewise, Gateway's progress is fully managed by a resident steering

committee and PoSI staff is available to guide the process. Ultimately, however, it's the residents who will decide which green improvements are made in their community.

Retrofitting communities to develop an ecodistrict seems to best meet the criteria of the social equity index developed for this thesis, but through participation at the Gateway community meeting, I realized that the most marginalized residents are still overlooked. Simply leaving the decision-making to residents does not combat the inherent flaws in our housing market and only guarantees that the most vocal participants will be directing the project. The Gateway model would benefit from additional tools and incentives for organizing and truly engaging the entire district.

CHAPTER 5: DISCUSSION

Comparing Europe to Canada and the United States

Local governance and action will become increasingly important as climate policy continues to evolve. Cities, as industrial and residential centers, have the greatest potential to implement changes towards arresting the effects of global warming. That being said, there are many political, financial and implementation challenges at the local level that muddle the path to climate health. At the local scale, a logical, justifiable, fundable process driven by good science does not yet exist (Bicknell et al. 2009). It is far easier for national governments to make loose pledges to reduce greenhouse gas emissions than for cities to coordinate development projects that contribute to such goals. However, the local level is where action must be taken.

Urban designers support the ecodistrict model for a multitude of reasons. However, it is risky to import a concept that has worked elsewhere without identifying how it will impact the local urban population. Despite environmental benefits, urban redevelopment projects like ecodistricts have the potential to cause displacement and encourage gentrification, outcomes that are often overlooked when the focus is on addressing environmental concerns.

The income distribution and political attitudes of European cities where ecodistricts currently exist are very different from Portland, Oregon, making it difficult to make direct comparisons around the globe. Scholars have long struggled with the

comparison of Europe to the United States (Lofstedt and Vogel 2002, Alber 2006, Harrison and Sundstrom 2007), because the political economies of EU countries are so diverse and differ greatly from the United States.

Despite this, the global diffusion of ecodistricts is underway. If it is to be as successful a tool in the U.S. as it has been in Canada and Europe, attention must be paid to understanding the complex political structures and social contexts within which they have thrived.

Strategic Economic Development

This study has clarified the importance of strategic economic development in coordination with ecodistrict plans. Ecodistricts will naturally inspire investment and economic growth in the areas they are placed and it is important to anticipate those changes. Developing a comprehensive economic development plan that considers the needs of existing community members and future residents and matches them to future uses is critical. Planners need to think beyond filling the retail storefronts and office spaces and instead design a community that genuinely serves every level of its constituency, both professionally and consumptively.

The Gateway case demonstrates that even when you are working in a marginalized community, the people who participate in planning activities are overwhelmingly focused on increasing their own economic returns. Rising home values can be

beneficial to some, but can also negatively effect renters and other low-income residents. Even the low-income residents who can afford to stay in an area experiencing economic growth may not feel comfortable engaging with the incoming demographic and choose to leave.

Additionally, Dale and Newman argue that, the “greening” of neighborhoods can increase desirability, which spurs gentrification that drives up housing prices. The developments become increasingly less affordable, which paradoxically decreases the diversity that Florida claims is so crucial for the creative class” (Dale and Newman 2009). To preempt the loss of authenticity with the district, an economic development team should engage with the community early on to find out which mechanisms will make the most sense for keeping economic returns within the district.

Aligning an economic development campaign with ecodistrict development also provides opportunities for education, regarding not only sustainable living, but also regarding taking full advantage of incoming available resources. An education program that teaches job skills that will be useful within the new district can be critical to giving existing residents a competitive edge.

Each of the cases addressed in this thesis has developed a robust commercial corridor, but with the exception of Vauban and Rieselfeld, there has been little

innovation regarding the retention of economic benefits for existing residents. Even in Vauban and Rieselfeld, the Baugruppe model, while beneficial to the cooperative families who participated in the program, does not capture any economic benefit for renters or the lowest income populations who were living there previously.

Ecodistricts that aim to be socially equitable must consider how lower income residents will be able to afford the same standard of living as market rate residents.

Ecodistricts cannot guarantee a certain wage level for every resident, but they can be supportive by incorporating economic mechanisms that distribute the value of the new development back to those that live there. These mechanisms can come in many forms: parking benefit districts, use of local currencies, visitor fees or tax increment financing. In other words, mechanisms that are conceptually similar to what has worked when creating business improvement districts and redevelopment areas, where the increased tax base (or any incoming value) is reinvested in the same community.

District Leadership and Income Mixing

The seven cases presented in this thesis demonstrate a diversity of local governance styles. However, within all of them, is an underlying emphasis on the importance of strong leadership. Whether it is a visionary planning staff (Wulf Daeking of the City of Freiburg), a motivated champion (Louise Lundberg of Augustenborg) or the

residents themselves (Gateway Steering Committee) some entity needs to guide the ecodistrict's development.

If different socio-economic classes will be mixing within an ecodistrict, leadership becomes even more important. In discussing my thesis topic with representatives from the Clinton Global Initiative at the EcoDistrict Summit 2011, I was told, "We just do carbon offsets – we can't be expected to include the social stuff." I found this to be a rather frustrating, but common sentiment amongst climate change activists. This indicates that further alignment of social equity principles to the overall measurement of sustainability success will be important to incentivize leaders going forward.

The following short case studies, while not specifically about ecodistricts, help to illustrate the importance of leadership and proactive programming for high-density, mixed-income housing:

Ijburg – Amsterdam, The Netherlands: Land resources for building new housing within the City of Amsterdam are limited. Urban planners tasked with meeting the increasing housing demand have found a solution in creating new fill islands of the shores of the existing city. Ijburg, conceptualized in 1995 and built in 2000, was one such solution. Ijburg was planned for completion in two phases. However, only the first phase (9,000 housing units) has been completed to date and the second phase

(13,000 additional housing units) is on hold indefinitely until the economy improves.

In addition to meeting the demand for market rate housing, Ijburg set aside 40% of the housing units for social housing for low-income and disabled citizens. Following its nickname, "Island without Borders," Ijburg set ambitious goals for social inclusion. Planners mixed the social housing, rental units and homes for sale throughout the development. It is not uncommon to find all three types of housing in the same building, with little differentiation between them.

Mixing incomes, while a valiant effort on behalf of the City of Amsterdam, has not come without significant issues. Many of the homeowners on the island of Ijburg claim that they did not know they would be sharing their living spaces with such a diverse population. Many feel that had they known, they would have chosen to live elsewhere. They also feel stuck in the situation financially, due to the unstable economy. The homebuyers were the first to move in, and as the City moved in immigrant populations, lower-income families and the disabled (some formerly housed in institutions), tensions grew between the different populations (Spigt 2011).

The City has not ignored the fact that social tensions are high within Ijburg and has spent the last four years experimenting with ways to help residents live happily

together. A coalition of senior staff from the city, the housing developers and the service providers has been formed. This group meets regularly to discuss how to collectively approach pressing issues. A neutral party, Stef Spigt, who also works closely with the residents to assess their needs, mediates these meetings. Spigt's position is funded by the coalition, who understands the value (albeit financial) in fostering a happy, healthy lifestyle on Ijburg.

The wealthier residents have also taken community development matters into their own hands by forming a group called, "Ijburg Dreaming & Doing." This leadership group generates ideas for improving the public spaces, coordinates community projects and encourages the involvement of the lower-income and disabled residents. Despite the seemingly exclusionary structure of the group, each project has a champion that is able and willing to see it through (Spigt 2011).

Integration of communities through the schools has also been successful. Every so often, residents of Ijburg have been invited to share their cultural backgrounds with students. The hope is that encouraging acceptance between young people will translate into more tolerance between the adults (Spigt 2011).

It is clear that if Ijburg follows through with phase two of the development, the organization of housing units will need to be modified. Currently, the plan is to continue mixing incomes within each block, but to separate housing types by

building so that homeowners and renters are only sharing the internal common areas with residents of a similar status (Spigt 2011).

There will also be an expansion of the social services and community programs provided. However, it is widely accepted that mixing incomes on this scale is a very challenging task. The City of Amsterdam has not given up on their vision, but they are still working out the best plan for the future. As Spigt explains, one thing planners must recognize is that “you can’t just plan for the hardware; you need the software as well” (Spigt 2011).

The staff at Ijburg did not expect the initial backlash they received, but through the creation of diverse leadership teams, the community has been able to overcome their grievances, bond and thrive.

Woodward’s – Vancouver, Canada: The Woodward’s complex in downtown Vancouver is a testament to the value of public space. The development consists of three towers with common areas in between. The first tower provides housing for extremely low-income residents, a population that reflects the community that was living there previously. The second tower is market-rate condominiums and the third is office space. The presence of the market-rate housing and office space allows for the deep subsidy of the low-income housing. However, planners had to take great care in designing a space that both populations could co-exist peaceably.

Unlike in Ijburg, architects were deliberate in giving each tower its own entrance. This allows those that prefer to stay separate with the option to do so. Remarkably, just the opposite has happened. In the main atrium where there are retail spaces and an indoor basketball court, the community comes alive. Various community groups can utilize the atrium for events and meetings. Some groups perform Capoeira there, which provides entertainment for non-participants and those living in the surrounding neighborhoods (Pask 2011).

The public programming draws people in and creates a microcosm of urban uses. The entire project was risky and hotly contested on both sides. However, the design of public space in this instance has created a place where people feel comfortable and interested in mixing among groups with which they may not have otherwise interacted.

Valencia Gardens – San Francisco, CA: In 1943, the San Francisco Housing Authority (SFHA) helped to construct Valencia Gardens, a 246-unit mixed-income public housing development located at 340-370 Valencia Street in San Francisco's Mission District (MHDC, 2011). Prior to its redevelopment through the HOPE VI program in 2006, Valencia Gardens had many problems related to sewage, plumbing, electricity, unit design, landscaping, community facilities, rodents, and the condition of fire ladders (MHDC, 2011). Due to the high levels of crime within the

property and its deteriorating infrastructure, the development became a negative influence on the surrounding neighborhood and was not well integrated into its environment (Commissioners Memorandum, 2003).

Due to the new HOPE VI mixed-income model at Valencia Gardens, the resident mix has changed since its redevelopment. The Housing Authority still fills the dedicated public housing units from their waiting list, but the property management company has its own screening process for the higher income units it is entitled to fill. Despite the fact that all the units are at a maximum 50% AMI, this mixed screening process contributes to the selection of more “desirable” tenants and slightly raises the socio-economic status of the entire property (Alvarenga 2011).

The relationship between the site managers, service providers and current residents is strong, mainly because there is a mutual respect between all of the groups (Ugarte 2011). The manager and the site service director can often be found attending resident events, even on their days off. When walking around the property, both parties are unanimously greeted with cheerful hellos and well wishes. Finding the type of manager that is willing to truly be a member of the community is critical to the property’s success (Ugarte 2011).

When asked about living in the Mission district with respect to gentrification, D.J. Brown, President of the Resident’s Council at Valencia Gardens, feels that “it’s more

desirable to live in a thriving neighborhood.” In fact, the residents love the Mission so much that they want to collectively give back to the community. They are training to be a one-stop shop for disaster relief services and are already certified by the Red Cross. They hope that if a disaster came to the Mission, Valencia Gardens would be a safe haven for people.

Brown feels that the redevelopment of Valencia Gardens has helped to foster community within the Valencia Gardens building. In addition, Brown believes that the redevelopment has improved relationships between residents and the Mission District neighborhood. He states, with respect to the redevelopment that, “we didn’t just change the landscape, we changed the community.”

The Resident Council acts as a surrogate family for many Valencia Gardens residents. Each board member serves two years and the experience often changes their life. Brown explains, “I feel so fortunate to have been one of the lucky ones to have the privilege to live here at Valencia Gardens.” He feels that the opportunity of serving on the Resident’s Council has been life changing. In general he enjoys working with MHDC and the property managers, stating “there’s still room for improvement, but [the management] has come a long way.”

These case studies of mixed-income urban housing developments are important for understanding how ecodistricts might integrate into existing urban environments

and housing markets. Some affordable and public housing will need to be included in the ecodistrict model if equal access is a goal, which brings with it a variety of challenges that may only be mediated with the proper leadership and management in place.

Adaptability and appropriateness

The variety of cases and development features discussed in this thesis indicates that ecodistricts need to adapt to the specific contexts in which they are planned. No one prescription for design, community interaction or governance can be implemented everywhere, but it is the act of thinking about what is *appropriate* for a certain city or community that makes the model *replicable*.

Civic ecology, which advocates that community values drive environmental initiatives with technology incorporated as needed, puts adaptability at the forefront of the ecodistrict process. When technology is the sole driver, systems are dictated for the community based on what's available and that is not flexible enough to diffuse the ecodistrict concept across different community types.

The eco-districts studied in this thesis have excelled at incorporating technologies and ideas about community that are cutting-edge today, but there are few design elements that will allow them to adapt for future generations. Ecodistricts need to

be flexible from the start, to change with the community and environment that will undoubtedly change in and around them.

Even if an ecodistrict is designed appropriately and to be adaptable, there may be even greater barriers preventing it from being a socially equitable space. As discussed in the literature review, housing markets (especially in the U.S.) have significant structural flaws that still greatly determine the location of where minority groups reside and what they have access to (Oakley and Burchfield 2008). This is an underlying issue that is different for every nation and also one that the ecodistrict model may not be able to reconcile on its own (Waquant 2007). Design and programming can only offer a certain level of equity, but hopefully the following recommendations can help ecodistricts excel (at least) at that.

CHAPTER 6: RECOMMENDATIONS

Resident Diversity

- Add green features to existing communities. Retrofits may be more sustainable than master-planned projects and can help to reduce the effects of displacement. (Augustenborg, Gateway)
- Embrace the cultures of the district and don't let language barriers prevent people from participating in the planning process. This may require innovative and proactive engagement techniques to earn community support early on. (Vauban, Gateway)
- Appoint a diverse group of project leaders who get paid stipends for the organizing work they do. Low-income community members don't often get paid for their contributions to neighborhood projects and organizing. (Gateway, PoSI)
- Reward residents for their environmental achievements. Likely, the existing carbon footprint is lower in low-income communities, because they consume less overall and should be acknowledged for that. (Gateway, PoSI)

Housing Affordability

- Make transit options available to all residents, but also protect them from displacement as a result of the new infrastructure. The availability of transit connections does not automatically increase access to community resources.

In fact, new transit lines can be one reason that home values increase in the surrounding areas. (Hammarby Sjostad)

- Capture value within the district. Develop programs or mechanisms that guarantee economic returns for district residents. (i.e., training for jobs within the district, utilization of local currencies, parking benefit districts and others). (Gateway)
- Provide housing for all income levels. Inclusionary housing can't solve structural issues in the open housing market, but it is a requirement for equal access to ecodistrict opportunities. (Vauban, Rieselfeld, Western Harbor, Southeast False Creek)
- Provide additional developer incentives to reduce financial barriers to implementing social equity principles. (Vauban, Rieselfeld, Southeast False Creek)

Access to decision making

- Create development models that benefit ecodistrict residents. In the U.S., local governments have little control over development proposals from developers who would be large enough to undertake a project like an ecodistrict. However, creative partnerships between local planners and the residents themselves can offer solutions that benefit the community rather than developers. (Vauban)

- Let residents spearhead district governance and decision-making. Planners can help to organize this initially, but leadership should come from within. It should not, however, include only the loudest voices. Deliberate selection or election of a diverse resident steering committee will be fundamental to engaging the most marginalized communities. (Gateway, Vauban)

Educational resources

- Support leadership and community programming for the long term. A resource center on-site that is adequately funded can help to support the community in reaching their environmental, economic and social goals. (Hammarby Sjostad)
- Develop incentives to encourage participation. Reward residents for their achievements no matter how small and make sure that local knowledge is equally respected and shared in addition to the materials presented by planners. (Hammarby Sjostad, Augustenborg, Gateway)
- Give all residents an equal opportunity to engage in the district's resources. This may require individual attention to catalyze involvement during the early stages. An eco-concierge or resident program manager can play a vital role in initiative adoption rates. (Augustenborg, Gateway)
- A portion of commercial space should be dedicated to community services. Ecodistricts are suited to provide increased access to daily needs like day

care, adult education, schools and recreation if such features are incorporated into the plans.

Community interaction

- Make district boundaries flexible and fully integrated with the surrounding environment and social landscape. No one should be excluded from the benefits of sustainable development because of a line on a map. (Gateway)
- Require that district employees are supportive and integrated. Management staff can play a vital role in community cohesion and integration. (Ijburg, Valencia Gardens)
- Provide community programming in public spaces. District leaders should be proactive in engaging the community long before and after the building projects are complete. (Woodward's)
- Design physical circumstances where people will be encouraged to interact: town square, shared church space, market hall or other. (Vauban, Rieselfeld)
- Organize efforts into one cohesive project. Resident leadership teams need to be coordinated so that there is maximum involvement and commitment to projects within the district. The more the residents work on building the district itself, the more likely they will be to uphold its ideals for the long term. (Gateway, Vauban)

Conclusion

Regardless of its flaws, the ecodistrict is currently one of the best development options for capitalizing on community capacity and achieving social sustainability as defined in this paper. The ecodistrict's unique set of physical and social attributes motivates behavior change towards a more environmentally integrated lifestyle. There is no doubt that ecodistricts can be successful in promoting sustainable design and living. However, it is important to acknowledge that while the project size and scope may be ideal, methods for community participation are still evolving. Improvements to the current model can be made.

In general, the focus on sustainability as a design scheme is still something that needs to be better understood. Ecodistricts make great strides in bettering the functionality of the built environment, but inherently they are still a human-imposed construct on the natural surface of the earth. Neil Evernden would argue that humans are equally a part of such natural processes, self-destructiveness and all, and that there seems to be no way out of this cycle, nor should there be (Evernden 1992). This leaves us with the paradox – to continue as we have – or to rethink our approach to habitation and material use from the ground up, making an effort to truly understand and balance our relationship with nature.

If it is to be believed that every new effort at sustainable design is a glimpse of where society wants to go, then the ecodistrict speaks volumes. Humanity, now

more than ever, seeks to do right by the natural environment. Designing the perfect living environment at least makes us *feel* proactive. However, it is no more sustainable to control nature than to be unaware of one's impact on it (Van der Ryn and Cowan 2007). The ecodistrict solution is still highly technological and leaves much to be desired in the way of true integration with natural processes.

Recognizing this notion is the first step towards development genuinely based in ecology, but it is possible that development only tending towards sustainability is enough (Thayer 1989). As the ecodistrict discourse continues to unfold, it will be critical to realize that these new ways of eco-living are merely our best efforts at relieving humanity's inner tensions (Evernden 1992). Accepting our role in the world's ecosystem is the first step; best practices for development should naturally follow after. For now, we have the ecodistrict.

Further Research

If I were to continue this research project, I would investigate social equity and ecodistrict development in three ways. First, I would add more criteria to the index I developed regarding how social equity can be measured within existing projects. For example, I would use GIS to map resident access to daily needs and services within each case study site. Such maps would demonstrate how ecodistrict planning may or may not provide for a higher quality of life through deliberate, transit-oriented design. I would also conduct a resident survey and focus group at each case

study site. Currently, I feel that my research lacks an understanding of how residents perceive their relationship to each other, to other parts of the city, to local government and to concepts of sustainable living.

Secondly, I would like to better understand the historical and existing housing market dynamics for each case study site. This thesis has shown me that despite good intentions and high-quality planning, certain groups are at a disadvantage due to economic forces beyond their immediate control. In the United States, race has long been a determinant of where people are able to live. Similar dynamics exist in housing markets around the globe and impact housing access regardless of development style. These dynamics could be studied through ethnographies on marginalized communities that live in the areas near existing ecodistricts and also through interviews with housing experts in each country.

Finally, I would spend a great deal of time observing and participating in the development of Portland's ecodistrict pilot projects. The City of Portland provides a unique learning environment with respect to ecodistricts, because the Portland Sustainability Institute (PoSI) has taken on ecodistrict projects in a variety of socio-economic contexts. I would like to see how PoSI's iterations on ecodistrict and urban development theory apply in practice. Currently, I know a great deal about the Gateway ecodistrict within Portland, but I would like to gain an equal understanding of the four other districts. Ideally, I would participate in as many of the resident

steering committee meetings as possible. I would also conduct a second survey asking residents in each district about their awareness of and level of comfort with ecodistrict components. This data would reveal if civic ecology (development driven by community vision and values) were actually in practice in within each pilot area. In other words, conclusions could be drawn about how each district population is participating in the future of their environment and about how they perceive the resources available to them.

This additional research would help me to better define what exactly an ecodistrict is, which is critical to developing a model that is replicable in many contexts. On the one hand ecodistricts can be defined by very strict technical measurements, but they also embody a utopian vision of how city life could be, which is much more fluid concept. Studying ecodistricts can help planners to answer questions about the application of sustainability to the built environment and how to best achieve the social outcomes they seek to support.

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APPENDIX A – IRB Approval

INSTITUTIONAL REVIEW BOARD University of California, Davis

PROTECTION OF HUMAN SUBJECTS - DECLARATION / ASSURANCE OF IRB APPROVAL

The following research study has been determined to meet the definition of human subjects research as defined by Federal Regulations and UC Davis IRB Policy and has been reviewed by the IRB in accordance with the Common Rule, where applicable, and any other governing regulations:

Project Title [248288-1] Two-Legged Stools Fall Down: An Analysis of Social Equity in Sustainable Development Industry Standards			
Principal Investigator Abby Monroe College of Agricultural and Environmental Sciences	Protocol No. 248288-1	Approval Period September 19, 2011 through September 18, 2013	
Sponsor(s) Department	Status New Project	Type of Review Exempt Review	Category 2

As Principal Investigator for the above-referenced project, you assume certain responsibilities, including, but not limited to:

1. You will conduct the study according to the protocol approved by the IRB. As the PI you are ultimately responsible for the conduct of the research and the protection of rights and welfare of the human subjects. You will ensure, at all times, that you have the appropriate resources and facilities to conduct this study. You will ensure that all research personnel involved in the conduct of the study have been appropriately trained on the protection of human subjects, in addition to the study procedures.
2. Any unanticipated problems involving risks to participants or others will be reported within 5 days to the IRB or in accordance with IRB Standard Operating Procedures (SOPs).
3. Any changes in your research plan (including but not limited to advertisements) must be submitted to the IRB for review and approval prior to implementation of the change, except when necessary to eliminate immediate hazards to participants. Changes in approved research initiated without IRB approval to eliminate immediate hazards to the subject, are to be reported to the IRB in accordance with the SOP, "Reporting of Unanticipated Problems Involving Risks to Participants or Others."
4. Your protocol must be renewed prior to expiration of the study. Failure to submit renewal documents to the IRB Administration by the Administrative Due Date may result in a lapse in IRB approval or termination of the study by the IRB. All research involving human subjects must stop without on going IRB approval.
5. If you plan to collect protected health information, you are required to comply with HIPAA requirements.
6. Studies conducted at the CCRC must be reviewed and approved by the VA Research & Development Committee prior to initiation of the study. Contact the VA R&D Committee for submission requirements.
7. The UC Davis Health System requires that all investigational drugs be distributed through the UCDMC Pharmacy. You are required to provide a complete copy of the approved protocol to the Investigational Drug Service Pharmacy. A copy of the signed consent form must be submitted to the Pharmacy if investigational drugs are dispensed through the Outpatient Pharmacy.
8. For studies involving investigational drugs at Shriners Hospitals for Children Northern California, drugs must be distributed through Shriners Pharmacy. A copy of the signed consent form must be in the Pharmacy.

Name and Address of Institution
University of California, Davis
IRB Administration
CTSC Bldg, Suite 1400, Rm. 1429
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Sacramento, CA 95817

Institutional Administrator
Eric C. Mah, MHS
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Fax No. (916) 703-9160

This Assurance, on file with the Department of Health and Human Services, covers this activity:
FWA No: 00004557
Expiration Date: December 02, 2013
IORG: 0000251

Std. September 19, 2011

APPENDIX B – Interview Sample Questions

Abby Monroe

June 2, 2011

SAMPLE INTERVIEW QUESTIONS (for European eco-district community leaders, developers, planners and local officials) Prepared by Abby Monroe

Begin by defining social equity: Should I develop my own definition to give interviewee perspective?

1. Can you describe specific elements of [insert eco-district name]'s design that were intended to foster social equity?
2. Were there additional social equity considerations discussed, but not incorporated into [insert eco-district name]'s final plan?
3. What aspects of [insert eco-district name] currently work well to foster social equity?
4. Who oversees educational or social programming within [insert eco-district name]?
5. Why do you think [insert eco-district name] is such an attractive place to live?
6. Were industry guidelines for sustainable design consulted in the planning of [insert eco-district name]? If yes, which standards were incorporated and why?
7. Something about inclusionary housing/affordability – need to do more research on what this looks like in Europe...
8. How are residents included in decision-making around issues that affect [insert eco-district name]?

Interview Notes:

APPENDIX C – Vauban & Rieselfeld Interview Notes

Rieselfeld and Vauban (Freiburg, Germany) – Interview notes

Wulf Daseking – Principal Planner, City of Freiburg

- Freiburg is known as the secret green capital of Germany
- Daseking has been a planner for 30 years and feels that continuity of vision results in quality planning
- Developers are not allowed to touch the mountains – even if privately owned
- Theory of development is to “beware the old and think of something new”
- Transit should be safe, quick, frequent, clean and cheap
- Recommends that cities develop in small plots so that architecture can be integrated, no ominous large-scale buildings
- Freiburg was motivated to create spaces for young families – keeps tax dollars within the city
- 85% of the streets are limited to 35 mph
- Cannot only focus on the downtown – cities work if the suburbs work too
- 2010 – Freiburg was awarded the City of the Year by the Academy of Urbanism and published a small book on planning for sustainable urbanism
- There is no industry in Freiburg, but several institutes (solar)
- One of the 3 best universities in Germany and 10 best in Europe
- Every zoning plan citywide - seeks the highest reduction in resource use at that time
- Read “Limits to Growth” 1972
- Detriments to the natural system are more expensive in the long run than implementing new technologies now
- Condensed, reduced land use makes Freiburg expensive
- Try to mix people and incomes all over the city
- Social system depends on the mixture
- Munster and Freiburg are the only 2 German cities that did not modify their street networks after WWII
- Used the same plots, but with new architecture – hard to tell what is old and what is new
- Rebuilt in the 50s
- Five finger green way/transit/development plan was drafted in the 60s
- Provides people all over the city, of all incomes, access to natural amenities
- No large advertisements are allowed on building facades
- When a new business wants to come in the city will discuss with them the best place for that business to locate – try to suggest locations near transit lines to reduce parking lots – helps business save money on development
- They can give employees transit cards rather than providing parking – only 2 spaces at a huge bank for boss’ wife and cleaning lady
- Education is key to success
- 70s – built out the pedestrian areas
- Freiburg is a poor city overall, but found creative ways to finance their projects
- Big box stores destroy inner areas/shopping
- Reduce energy consumption by reducing car movement
- City was proactive in keeping big box out – they looked for all the potential locations and zoned them against large store development
- City sells plots to pay for the development of public spaces in the same area
- Can’t bring any old junkie into a mixed income development, you need to find the right people
- All transit comes together at the main station; all residents live within 300m of a tram

- Rieselfeld has a church used by Protestants and Catholics simultaneously
- Baugruppe – provides density with character for each individual family
- Bank financed the city plans for Vauban and Rieselfeld – higher income units pay more to cover low-income residents

Thomas Fabian – Planner at City of Freiburg

- Principles - Barrier-free living, neighborhood control + others
- Vauban – Entire area was bought by the city from the national government
- Formerly a military area occupied by the French army
- Land was returned to national gov't after the war, but cities must purchase the land
- Vauban is 40 hectares
- City bought 34 hectares for 20m euros
- 6 hectares are the green spaces/rivers and the student services expansion that built more student housing (nonprofit)
- The only restored buildings are the 4 old barrack houses at the entrance to Vauban
- Buildings were sold to the Independent Settler Movement – a group of squatters from the left wing who had been living there since the French left for a nominal fee – 1 German mark
- They created low-income housing and still live and operate there – loosely associated with the car community (people living in cars/tents)
- 15% of Vauban is commercial development
- 15% rental
- 85% owned homes
- Baugruppes (groups of 30 families or so) built their own buildings without the help of a developer – only an architect and a builder
- Groups had 8 months to get together and let the city know they were interested, they paid the city for the land, now there is a waiting list (different from a social housing waiting list)
- 2,000 flats in Vauban, about 180 different building projects
- Incomes are not well mixed in Vauban – professionals cluster in Baugruppe area – rentals are on the perimeter
- More rental housing in Rieselfeld, also more commercial and urban looking
- Normally there are strict rules for building specs in Freiburg, but in Vauban that was let go. There were some overall rules, but materials, colors, style was up to the families.
- Too expensive to let low-income people do the Baugruppe
- Easily can tell that the self-built homes are made with love whereas the others are not
- \$412 euros per sq meter
- In the 80s Freiburg had a hard time providing enough housing, which motivated the design of the 2 quarters
- Then people moved away and/or into the quarters and the market calmed down, now it is becoming a problem again – they need more housing
- City can ask for inclusionary housing on city land only, and it cannot be demanded, only requested
- Each area of Freiburg has an informal “neighborhood org” – 25 districts
- These orgs speak loudly but not for all people – not elected
- Car squatters and Baugruppes have been fighting over whether they can stay there or not
- 65% vote for the green party – green party originated here
- Baugruppe contracts include connections to district heating and cooling, water, etc
- Passive houses are allowed their own small power source in the cellar
- Solar village produces more energy than it needs

- Homeowners earn money for solar power generated – mandated minimum payment from national law
- Power companies compete for solar – may offer more money back
- Community center in the middle was a former military house, it houses 2 of 3 kindergartens, event space, farmers market, lots of non-profits and sporting groups, org for car-free housing (Vauban is only car-reduced)
- You must buy a parking space if you have a car – get a break if you go car free
- People living there are proud of their neighborhood & happy with lifestyle
- Sandwiched between old city and Black Forest
- Rieselfeld is more urban, more schools, 5 stories vs. 4, more rental, new church
- City of Freiburg developed its own energy/environmental standards
- 65 kwh/sq.m/year – required, most are at 55, passive houses are at 15
- Feds now have standards like Freiburg's, but Freiburg is developing new ones
- Design of Vauban was a competition won by a firm in Stuttgart
- Sometimes 2 neighboring Baugruppes will hire the same architect
- 2 companies were founded last year to help facilitate baugruppe's working with architects
- Most architects in Freiburg are good at handling the sustainability aspects – lots of teaching is not necessary
- Freiburgers want to live green and don't need a lot of education as well – it is a special spot for people who want to live this way
- Read Ecotopia – Callenbach
- City stayed involved until the last plot was sold
- Heterogeneity of homes is important, but homogeneity of area due to zoning is good for community too

APPENDIX D – Hammarby Sjostad Interview Notes

Hammarby Sjostad (Stockholm, Sweden) – Malena Karlsson, Information Officer at Glashauset

- Need to get before & after photos
- Originally a squatters area, people had some rights, but mostly they were illegal
 - o Had to be relocated in the 1990s
- Land was contaminated and had to be restored – excavated dirt went to build the ski slope
- Development was inspired by the Olympic games, but Stockholm lost the bid to Athens
- Use incineration plants to deal with waste – creates energy as well
 - o However, it is not sustainable to depend on waste
- Goal was a 50% reduction in environmental impact over the rest of Stockholm, but only achieved 30-40%
- Project group was tasked with planning, many experts on one team
 - o Assessed the possibilities, limits, technology and technique
 - o Also created a competition amongst developers to be awarded a section
- 26,000 residents/10,000 jobs created
- Transportation is vital
 - o Free ferry across water
 - o Bus and tram to main transit lines, run throughout HS
 - o 3 car sharing companies, with specially reserved parking spots
 - 960 households are members
- 13% of HS population is 0-5 yrs old, normally 5%
- Expected more elderly people, but got a lot of young families
 - o 70% of rentals are only 2-3 rooms, didn't expect large families
- Only cost 2-4 % extra to build to environmental specifications
- 35000-50000 SEK per month + 4000/month in fees (to buy)
- 9000-12000/month (to rent)
- Not a free rental market totally, there are some rent controls
- 20% green space
 - o Private developers try to maximize sale-able space but HS wanted to show that a lot green space is better
- Highway eco-ducts connect wildlife and nature reserves
- All units have balconies and look out on green space
- Office, residential and retail seamlessly integrated
- Apartments came with highest rated appliances, to help keep energy use low
- 50% energy comes from resident waste
- 90% efficiency by producing electricity AND heat – only heat would be less efficient
 - o Heat also comes from purified waste water
- Biogas is digested from sludge in waste water
 - o Also makes fertilizer
- Free paper bags are given out to hold waste
- Blockages in vacuum waste collection system are resolved by robots
- Oversized waste can be an issue, but most residents do a good job of sorting
 - o Children's ad campaign about what to not throw in the toilet

- Rainwater flows into channels, but do not have irrigation
- Glaushausett was created because it was not expected people would know how to live sustainably – also serves as an info center for visitors
- Success is attributed to integrated planning process
- 1.5 Bill Euros from the City
- In Sweden, money for school follows each individual student, so the health of a school depends on the management of difficult cases – not low-income areas
- No events are planned for residents to get to know each other
 - o Other than the residents associations, it's hard to get people interested in being involved
- There are no low-income units in HS
- People interact at the Farmer's Mkt, stores, plazas, exercising
- Church plans events and you don't have to religious to attend
- The People's House – a nonprofit collaborating with the elderly population in HS
- Low-income people live in the suburbs, but they have great transit
- Per Skoglund – photos of squatters
- Squatters were displaced when HS was built
 - o Tried to organize to stay
 - o Think it's degrading to depend on the gov't
- Rich people pretend there are no social classes
 - o Low-income would say the opposite

APPENDIX E – Augustenborg Interview Notes

Augustenborg (Malmo, Sweden) – Louise Lundberg, Garden Curator

- Low-income public housing & green roofs society – Malmo
- MKB is the housing authority, not everything they build is low income (I think)
- Malmo was an industrial ship building city, but lost a lot of jobs in the
- AGB was originally built in the 50s as housing for workers living in the city slums
 - Considered luxury at the time
- At that time, the more energy you used, the wealthier you seemed – people liked to brag about it
- Each apt is still only 2 rooms
- When the city moved in welfare residents, crime also came and people were ashamed to be from AGB
- Because the buildings are old, there's no way to get to 100% renewable energy
 - Able to reduce by 20%
- Success communicating to current population is due to one on one discussion of new features and issues
- 3128 residents, only 400 show up to the community meetings and it's always the same people
- MKB is the largest green roofs producer in Sweden
 - See the benefits for society and the resident
- Rents were kept low during and after renovations – don't want people to move or pay for the improvements (lots of gov't subsidy/grants)
- Kept flats the same size
- Waiting list of 1-2 years to get in now, still a high rate of unemployment but the crime has reduced
- Residents have something to be proud of now
- Mgmt is key to the success
- New residents are of a slightly higher demographic – no long term rent controls, but original residents will not be forced out
- 13 different fractions of recycling
- No one has to walk more than 100m to recycle
- Waste is weighed and discussed with residents one to one
- Food Waste Story:
 - People didn't have room for countertop composters, so MKB designed a holder for them, but no one used the new holders
 - They offered to install them in each apt and when inside they discussed how to use it with each resident, adoption rate was high after the personal communication

APPENDIX F – Southeast False Creek Interview Notes

Andrew Pask, Community Developer for the City of Vancouver

Very political decision to change census data collection methods

Used to be mandatory, now voluntary

Feb 8th – data release

Census tracts don't = neighborhoods

30.30.30 taken out by council, reduced to 20% requirement – normal for the rest of vancouver
vision vancouver

city manager financial situation in athlete's village, developer went under, city had to take over, stats generated in rescue

turned one site into cooperative

75% occupied

should you have low income housing in the most desirable housing? Or do it elsewhere...

initial construction jobs, some retail that's growing, community center, live/work home based employment – generally discouraged though

nothing major

Remy Marketing Systems

BC Coop Federation

Woodwards

Public space plays a huge role

3 towers, work, market, low

FSU is there – academic institution

Microcosm of urban uses

Separate entrances

Atrium can be booked by various community groups – sometimes that programming draws people in

Interesting mix in the evenings – practicing break dancing and capoeira, coming from all over not just residents

No overarching community plan, layering of city policies, planning scales down to apply at local level,

Housing shortages for families, need affordable housing

Community planning division – small range community plans for each, very holistic, covers many topics – food, childcare, health, land use

Distill citywide policy

APPENDIX G – Portland Sustainability Institute Interview Notes

Naomi Cole, Eco-district Pilot Program Director - PoSI

What's next for PoSI?

- Summit findings, grant work, funding, catching up with ecodistricts, lots of things were put on hold for the Summit

How will EcoDistrict leadership and PDC choose projects and finance them together?

- Many of the ED steering committee members also sit on the PDC policy advisory committee board in Gateway, steer projects from both sides
- Figuring out a way to carve off a regular service charge or parking benefit district model
- Energy trust is an example of a surcharge that finances projects
- Parking benefit district pilot at PSU

As projects get chosen, where is the implementation/financing expertise coming from?

- PoSI provides technical assistance, but trying to build local knowledge
- 3 of the districts are more the savvy than others

Will the TIF or other money come through PoSI? Or PDC? OR direct to local ecodistrict leadership?

- Would go direct to steering committee, PoSI wants to hand off leadership

What's your perception of how things are going? In Gateway specifically?

- Close to district energy in Lloyd
- Slow but steady process
- Getting 5 active leadership boards is no small feat
- Will be well positioned when development dollars come back to Portland, good time to be in planning phase

What was it like to sit in on the Gateway stakeholder meetings?

- Anyone can participate, trying to foster community ownership of the ecodistrict, but not as diverse as it should be
- Only need to come to a certain number of meetings and sign an MOU to be on the steering committee
- More people will come when there are actual projects

Are you satisfied that they picked Gateway Green and the Senior Weatherization as first steps?

- Subsets of the assessment suggestions – reinforce the consultant’s work
- PoSI provides as much technical assistance as needed

Redesigned community outreach/assessment process after Gateway for Foster Green, 4 workshops rather than 2, starting with a project menu and narrowing down through steering committee, rather than starting with data

Bureau of Housing is only 1 year old, spun off from PDC
Foster Green is home to largest affordable housing developer

One commissioner is starting to push for an office of equity and would work with ecodistricts

Affordable housing has been involved on their own – not through city directives

Cully/verde is a good project example, “building wealth through environmental assets”

Anna Hammer at PSU/triple bottom line sustainability
-Led technical advisory committee on community vitality

PoSI has been criticized for not having enough metrics, but feel equity topics are important

APPENDIX H – Gateway EcoDistrict Community Meeting Notes

Gateway Eco-district Community Meeting Notes Facilitated by Steering Committee President, Colleen Gifford

Unified voice is key principle for organizing and taking goals to the city

Goals in PDX ecodistricts are not just environmental, need to start small and show the community the wins are real

Selection as an ecodistrict has catapulted Gateway into the main attention of the city

Overwhelming discussion of branding and promotion for increased economic revues in the district

Gateway Community Meeting:

9 performance areas – define an eco-district
Sarep did the assessment

Gateway was selected as an eco-district due to community advocacy – already has a strong community leadership

Lots of medical jobs – several hospitals in the area

Justin – Portland Development Corp. – urban renewal agency
Street plan – block by block, infrastructure and parks are big challenges
Portland Brownfield Project does small commercial cleanup
Nancy Olmstead, Natural Resource Planning Services

How do we engage the community? Diversity is needed on the steering committee

2000 PDC Development plan

Minorities may not be represented, but they are aware
Gateway is commercial (strip malls) – residential and medical

Ecodistricts team has signed an MOU and completed an assessment, some events have been held

Main goals are Gateway green and weatherization for seniors
Gateway Green might be a good example of a “flexible” edge – right outside urban renewal boundary

Gateway arch is important in identity

Who will build and maintain the Gateway Green? Created a partnership between Portland Parks (maintain) and a builder

Name changed from ecodistrict to Growing Gateway because they thought ecodistrict was unapproachable

Evolving our success tagline and logo was designed with help from the local high school – audience comment about disliking the tagline due to redundancy

Trying to reduce energy use through weatherization – need to find grant money so that Clean Energy Works can come to Gateway – want them to grow not shift focus from other neighborhoods

Solarize Gateway – buy in bulk to lower costs

Community comments:

Developer: district doesn't have control over urban renewal funds
It's supposed to go for infrastructure and parks but it doesn't
Need to form a Political action committee and demand this be changed
No funding for the next five years
8M went to the children's receiving center
This is not why the renewal area was created
There have been lots of studies on Gateway but no implementation
Same units for affordable housing can be built by private sector for less

City Council/Trimet and Metro are in control of funds
Not a coincidence that all ecodistricts are on top of urban renewal areas – need to kick start funding but it goes for other things

Hate boundaries – needs more flexibility

PDC: Can look at it as taking funds for other projects or as leadership towards other efforts

Developer: Buildings won't generate new value when they house services – don't pay taxes

Need funding for projects, but economic benefits must be tied to LIC

Organizer: Need investment in the neighborhood – not developers looking for cheap urban renewal projects

Need to make Gateway a place to stop/visit, not just pass through
Rebranding to drive economic activity

Education Center project – 5 universities coming together
Cradle to Career education programs

37% of Portland's youth are in the East

Safety and jobs are biggest community issues – from PSU report – neither were addressed in this meeting

LIC don't want energy savings and parks

77 languages spoken in Gateway

Global Gateway – is a competitive strength

Education center could help rebrand

Ride Connection – building a prominent HQ building/community space on major corner with famous architects

Serve handicapped and LIC to use transit

How do you attract more culture? Partner with ERCO, David Douglas and Park Rose school districts

Join other communities' events

Set aside money for grants to immigrant organizations

Relationship building is key and takes a long time

Grant writing in other languages

Small seed money and interaction goes a long way

Ecodistrict message is only in English

Contact churches

Eliminate planner-speak

PDC – show them how it will effect their pocketbook

Marketing campaign through Fred Meyer

PDC is looking for alternative methods for public outreach

What do you want to see on your street?

Partnerships with community services are important

Visioned by city to be a very dense community

Teach through high schools about ecodistrict activities

Job training from weatherization program

Join MBAs with planning students to develop an economic plan for Gateway

Campaign to build the district and confidence within Gateway, not just sell Gateway to others

Build up local businesses

May need a landmark attraction

Marketing plan will help other agencies and people see how they fit in

Get the community involved early on

APPENDIX I – EcoDistricts Summit 2011 Notes

EcoDistrict Summit 2011 Notes

Seth from Clinton Global Initiative, “We just do carbon offsets” – can’t be expected to include the social stuff

PoSI is an intermediary for sustainability research
Goal is to suss out innovation for execution

Rob Bennett: neighborhood level planning needs more development
City of Portland is a major sponsor of PoSI and PoSI was founded by Mayor Sam Adams – currently on his way out

Mayor’s goal is to move beyond individual projects, now consulting in Asia/Hong Kong

Mayor is the political champion of cities, represents the values and sets the tone

Mark Holland: we’re all converging on the district-scale, when someone asks you, “what neighborhood are you from?” we think of the district-scale automatically

How do we step forward in a recession? Some people are frustrated we aren’t moving fast enough, but a lot of progress has been made in recent years

2050 is a real goal for sustainability; there will be 2 complete cycles of infrastructure in this time period, 2 cycles of building replacement, but we need to get after it now

Mark Watts from ARUP: in Addis Ababa they are raising slums, government can’t keep up with change, what is their housing model?
China is involved
Transportation is the most important way to reduce carbon
Need carbon pricing

Planning Director from Stockholm: The biggest issue with Hammarby is the lack of low-income housing

Gunnar Soderholm, Director of the Environment and Health Administration, City of Stockholm

Portland Division Planning & Sustainability – merges traditional planning tools with in-the-streets ideas

McKinstry – people need to be connected to buildings

City leaders have trouble being first – they like to see examples

Need whole systems with water and waste not just energy

Technology has surpassed behavior; need to catch up with people training
 Public dialogue is too uptight, need to take risks, let us battle it out and get messy
 Create healthy connected communities, not just eco-districts

Technology is the easy part, cycling becomes the new social norm, need behavior change through copy cat syndrome

Federal government support of new technologies is declining, cities can step up, cities will hold all the power in the short term

Pre-approval of exempt building plans – shouldn't be so hard to get stuff done

Think about synergies when placing buildings

LEED doesn't measure performance once running

High quality urban design is a technology, US needs to catch up to Europe

Educate communities about the greater good and demonstrate return with measurement

One size doesn't fit all, know your place but move fast
 Avoid alienating language

Session 1

Community-based Sustainability:

Southeast Uplift, funded through the Dept. of Neighborhood Involvement, top-down and bottom-up to promote grassroots democracy and provide a public forum, network systems help with communication

Lessons from EcoDistricts:

LLOYD: Business Improvement Area, only in organization phase, district heating from the city

80% of area owned by 8 property owners

Want to encourage economic development

GATEWAY: all transit passes through, near airport, 3 light rail lines, commercial and residential, mostly strip malls, 2 school districts, 77 languages spoken, large blocks

Gateway Green: community biking/green space developed by grassroots

community group, want to encourage people to move to Gateway, has a negative image in Portland

GrowingGateway.org

Assessment completed, but do not have a governance structure yet
 Lots of low-income residents – starting a seniors weatherizing project (like Augustenborg)
 Neighborhood-based delivery approach

FOSTER GREEN/LENTS: Jillian Littlejohn, changed name from Lents to be inclusive of other areas, residential/commercial, great green geography
 9 neighborhoods within the district

Cultural and racial diversity, \$21,000 median income, created a diverse steering committee – MOU signed
 Have house parties and events to establish trust – to see if residents wanted an ecodistrict
 Residents are involved as active stewards; want to keep jobs and businesses in the district
 Residents are given a leadership role, but still many people they need to talk to
 Specific projects have not been decided
 FLIP - Foster/Lents Integration Partnership
 Only international farmer's market

SOUTH WATERFRONT: Transportation options are an important goal, Block 49 will be an affordable housing project
 Communication with renters has been difficult
 Sustainability dashboards will create competition for behavior change

SOMA: changed from “university” to be more inclusive, Halprin blocks need revitalization, left over from urban renewal of the 60s, daytime population is large, still in organization phase, boundaries are flexible, Bob Nato is the chair of committee/property owner

No social equity on stakeholders list:

1. retail strategy
2. green streets
3. revitalize halprin blocks
4. services for new tenants
5. parking benefit district
6. bike sharing
7. district utilities

Land value of SOMA is very high – 8M per block
 Expand existing district steam system
 Solar site assessment
 Oregon Sustainability Center with Bullitt Foundation

Identify a brand that attracts more residents and students, want to increase property values

Advice: process is not linear, local leadership empowers folks to make changes, persistency, any brand is good, don't confuse audience

Community org barriers – Gateway wants jobs, not ecodistrict

Funding issues are unique to each area
Stakeholders cant really speak for whole district
Repetitive conversations and education are needed

People see it as a positive opportunity to get involved

Lloyd energy district will be a stand-alone improvement

PoSI's role – 3 yr pilot project, time to renew, goal is to transition PoSI out of each district

All five districts are urban renewal areas, funding also from Portland Development Corp.

PoSI is a consultant in Gateway

Don't necessarily need a new org in each district

Parking benefit area – raise tolls and keep the money within the district

PoSI established all of the partnerships and took leaders through an assessment process

Need to make the business case for each project to get the development community on board

How will the eco-districts align with Portland Plan? Afraid city will just come in and take over

Unified voice is key principle for organizing and taking goals to the city

Goals in PDX ecodistricts are not just environmental, need to start small and show the community the wins are real

Tony DeFalco – Social Equity in EcoDistricts

Climate change solutions can help low-income people

Equity is about decency and a quality of life and mutual respect

Environmental movement left out the social, technology has been the main driver of eco-districts

There are no regulations to alleviate poverty – like there are for environmental issues

Equity is the non-negotiable part of sustainability

How do we do it well and make money?

Income disparities lead to issues that cost all people

VerdeNW.org has an environmental model with social equity as the driver

Residents are not interested in an only “green” conversation

Tribes managed Salmon runs just fine for 1,000s of years – original sustainability

Ethos in-line but not honored as such, causes a disconnect to the environmental movement

Black Hiker Video

Donita Sue Fry, Native American Youth and Family Center

Nuin-Tara Key, Metro

Carl Talton, United Fund Advisors

Tony DeFalco, Tony DeFalco & Associates

How do you include LIC & CC in sustainability planning?

- Identify trusted leaders, there is a history of distrust with researchers
- Meet people where they are
- Identify a shared vision
- Find community champions
- Annual reporting to show progress on the Community Benefit Agreement
- Understand what you don't know about and that the community may know more
- Don't expect people to come to you
- Tech experts should not be the face of your requests

How do you empower people to have agency in the future of their own community?

- Money
- Intention and reality is not always the same
- Loans, jobs, financial benefits

Van Jones: when we aren't trashing people we won't trash the environment

Take your time to find the right steering committee

Framing the “ecodistrict” is key – it can be about things that really help the neighborhood

Low-income community members don't get paid for their contributions
 Develop green leaders who get stipends for the work they do

Invest in people as a part of the process
 Think of the bigger picture

CBA menu given to developers – broad but choices must fit with community
 TIF can be taken away from developers if out of compliance with the CBA, helps to
 make sure you have a good well-managed project

There are training and business opportunities involved in retrofits

Lots of focus on climate benefits, but not social benefits
 Make sure \$ stays in the community

Clean Energy Works doesn't help LIC and seniors – Climate for Cully Model, creates
 local jobs in the area

Bike sharing is not oriented towards LIC – must have a dense downtown area to
 warrant and most LIC are on the edge

Who gets the contracts is really important
 Intentional choices about who's involved

Operationalize equity in ecodistricts: policies in place, enforced, champions,
 accountability mechanisms

Services and amenities must be specific to the community, commercial covenants,
 one on one interactions, must create our own regulatory mandates around equity

Be truthful always

Framing sustainability in general may not register with LIC
 What are the individual benefits?

Existing carbon footprint is lower in LIC – they use less, reward them for that

Jeb Brugman jeb_brugman@thenextpractice.com

Policy needs to be in place for ecodistricts to work
 City needs to create an institution to drive the process
 W/o density and land use, ecodistricts won't work
 KUKA is the institution in Kronsberg, makes sure things are working

Par Ankvert – City of Stockholm – when the city owns the land, it's easy to make demands, but developers did too in other areas

Western Harbor and the Royal Seaport are now the standards for new development across the whole city

Develop internal city systems – don't outsource

Behavior Change Panel

Groups and communities, not individuals, make decisions

Make the default choice the sustainable choice

Reduce barriers – through materials and information

80% reduction sounds scarier than 2 % per year

People are more likely to follow through when making a commitment to a group

Gravity can be disempowering if it provokes fear/desensitizes people

People are more likely to go for wants vs. avoid negatives

Make the solutions worthwhile

Individuals think short term – community thinks long term – study to reference here

Peer to peer is the most trusted method

Community benefits from projects are more important than energy savings

Eco-concierge – one on one assistance with green lifestyle, greatly improves metrics

because people know how to use the technology and the tools are incorporated

Anna Lodge – example eco-concierge

ZedBar in BedZed London Community – very popular bar until it was moved to the community center at the edge of the area – bar life died, no street interactions to drive community

Enable, foster with programs, monitor

Design for food box delivery in high-rise buildings

Quality of life vs. guilt and shame

Pump tires in parking garage for the residents

EcoDistricts Research Ideas

Gentrification

Jobs

Affordability for seniors

Nested systems

Scales for strategies

Safety

Unique models for economic development

How do you create a job?

How are we defining things? Who is let out?

How to keep local dollars in ecodistrict

Allows for tracking – local currency

Designing for adaptability – make things easy to retrofit in the future

Policy incentives have changed over time – the affordable housing problem wasn't always there

Community cultural assets are missing from the conversation

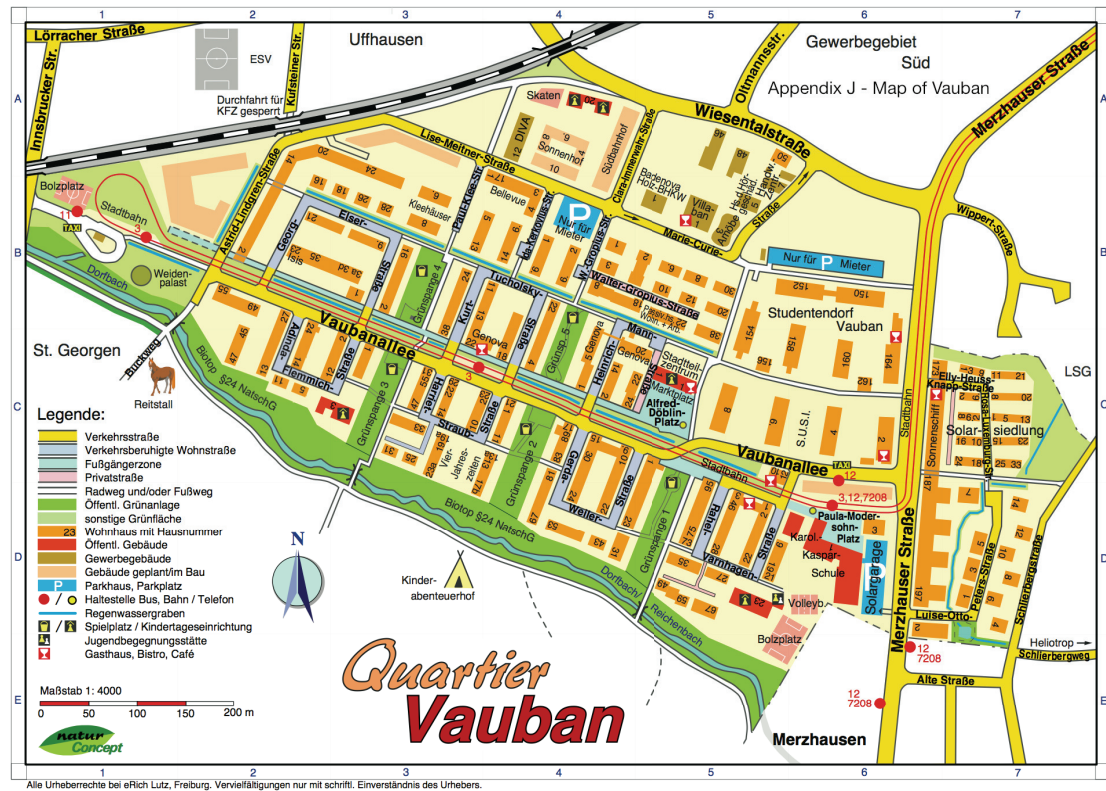
Districts need to match business clusters

Plan for shared resources in disaster times

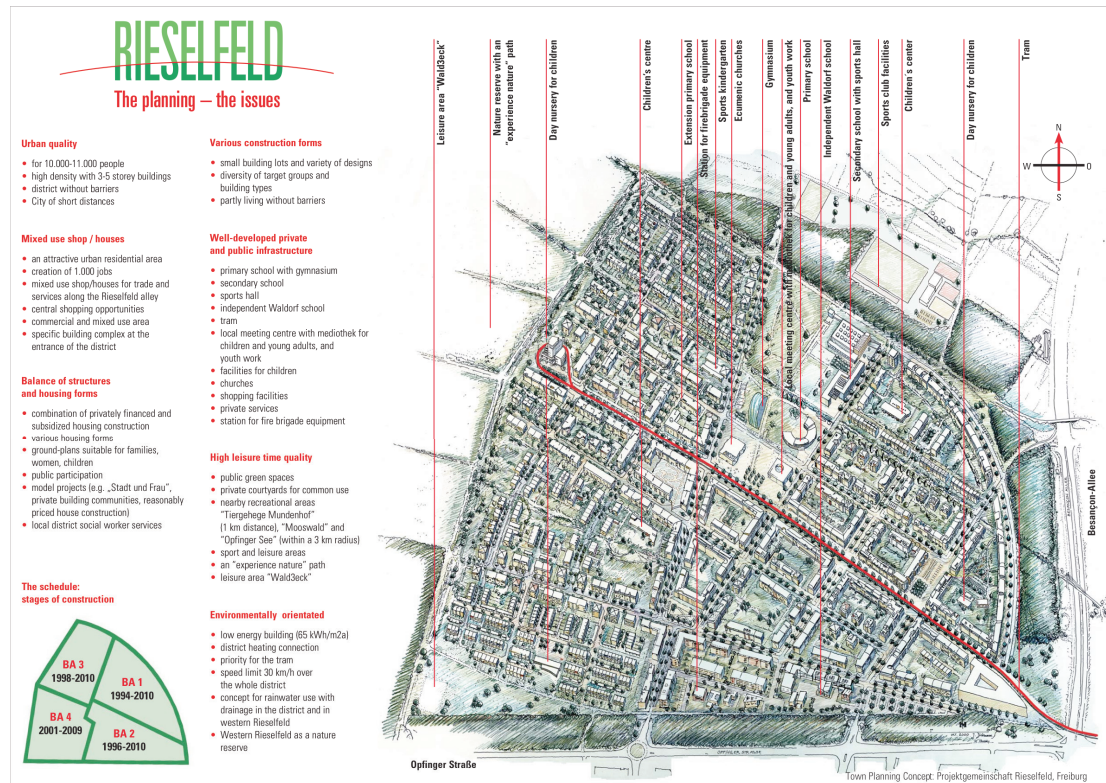
How can we get businesses to demand inclusion in ecodistricts?

There's a grad student paper about how to raise \$ for ecodistricts

APPENDIX J – Map of Vauban (Freiburg, Germany)



APPENDIX K – Map of Rieselfeld (Freiburg, Germany)



APPENDIX L – Map of Hammarby Sjöstad (Stockholm, Sweden)



HAMMARBY SJÖSTAD – ENVIRONMENTAL MAP



HAMMARBY SJÖSTAD – DEVELOPERS AND ARCHITECTS

NORRA HAMMARBYHAMNEN

1. New office building for White Arkitekter
2. SISAB / Tullgårdsskolan
3. Familjebostäder / White Arkitekter
4. Familjebostäder / White Arkitekter
5. JM / Åsberg och Buchmann Arkitekter
6. SKB / Åsberg och Buchmann Arkitekter
7. JM / Åsberg och Buchmann Arkitekter
8. JM / FFNS Arkitekter
9. PEAB / Roman Wozniak Arkitekter
10. Seniorsgården / Nyréns Arkitektkontor
Stockholms hem / Nyréns Arkitektkontor
11. Folkhem / Nyréns Arkitektkontor
Lennart Ericsson / Nyréns Arkitektkontor,
Brunnberg & Forshed Arkitektkontor
Besqab / 5 ARK-gruppen
Einar Mattsson / 5 ARK-gruppen
Reinhold Gustafsson / Jan Fidjeland Arkitektkontor

SOMMAREN

12. PEAB / Lindberg Stenberg Arkitektkontor

HENRIKSDALSHAMNEN

13. Borätt / Erséus Arkitekter
14. Familjebostäder / Erséus Arkitekter
15. Skanska PDR Sweden / AIX Arkitekter
16. Järntorget Bostad / White Arkitekter
17. Svenska Bostäder / White Arkitekter
18. Borätt / Erséus Arkitekter
19. Botrygg / AIX Arkitekter
20. Botrygg / AIX Arkitekter
21. Seniorsgården / Nyréns Arkitektkontor
22. Abacus /
Lindberg & Stenberg Arkitektkontor
23. JM / ÄWL Arkitekter
24. Wallenstam /
Frenning & Sjögren Arkitekter
25. Järntorget / White Arkitekter
26. ByggVesta / White Arkitekter

LUGNET

27. Borätt / Erséus Arkitekter
28. Riksbbyggen / Kod Arkitekter
29. Wallenstam /
Frenning & Sjögren Arkitekter
30. Stockholms hem / White Arkitekter

SICKLA UDDE

31. JM / Nyréns Arkitektkontor
32. Svenska Bostäder /
Erséus, Frenning & Sjögren Arkitekter
33. SISAB (school) / Arksam Arkitektkontor
34. Familjebostäder / White Arkitekter
35. Familjebostäder / White Arkitekter
36. Skanska / Hedborg Gyllenhammar Arkitektkontor
37. JM / ÄWL Arkitekter
38. Svenska Bostäder / Lindberg & Stenberg Arkitektkontor
39. HSB / Modern Line Arkitekter
40. HSB / Modern Line Arkitekter
41. Skanska / Brunnberg & Forshed Arkitektkontor

FORSEN

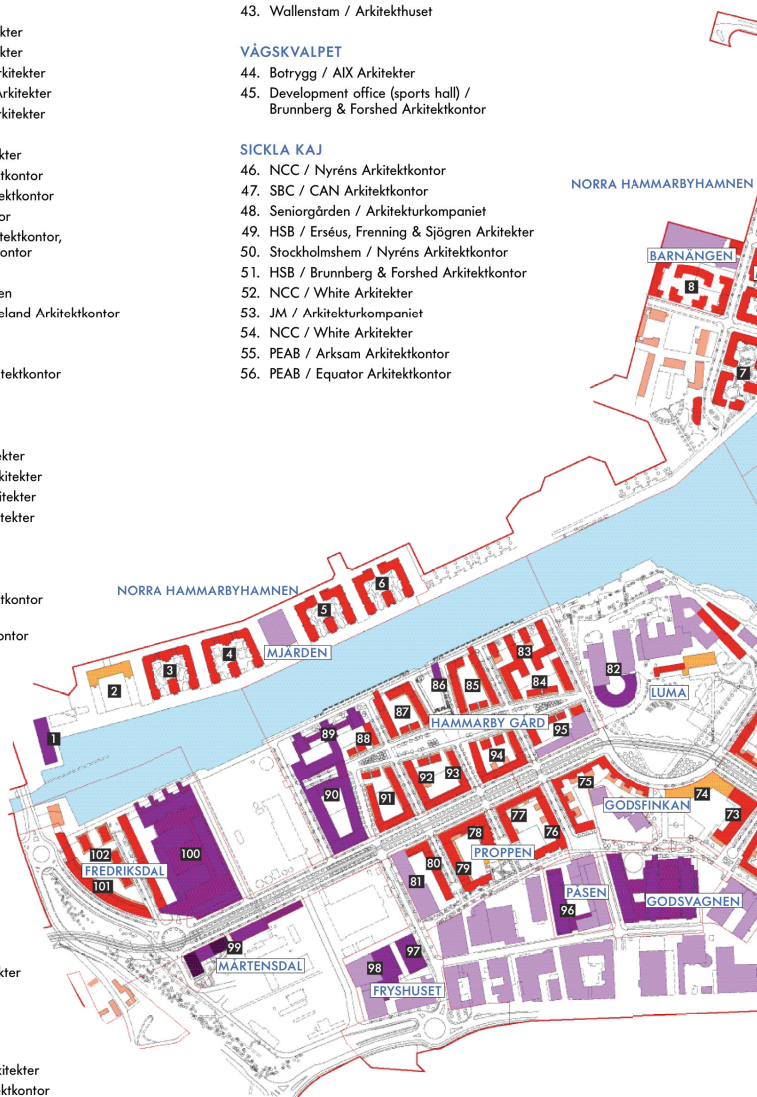
42. Svenska Bostäder, NCC / Johanson Linnman Arkitekter
43. Wallenstam / Arkitektus

VÅGSKVALPET

44. Botrygg / AIX Arkitekter
45. Development office (sports hall) /
Brunnberg & Forshed Arkitektkontor

SICKLA KAJ

46. NCC / Nyréns Arkitektkontor
47. SBC / CAN Arkitektkontor
48. Seniorsgården / Arkitekturkompaniet
49. HSB / Erséus, Frenning & Sjögren Arkitekter
50. Stockholms hem / Nyréns Arkitektkontor
51. HSB / Brunnberg & Forshed Arkitektkontor
52. NCC / White Arkitekter
53. JM / Arkitekturkompaniet
54. NCC / White Arkitekter
55. PEAB / Arksam Arkitektkontor
56. PEAB / Equator Arkitektkontor

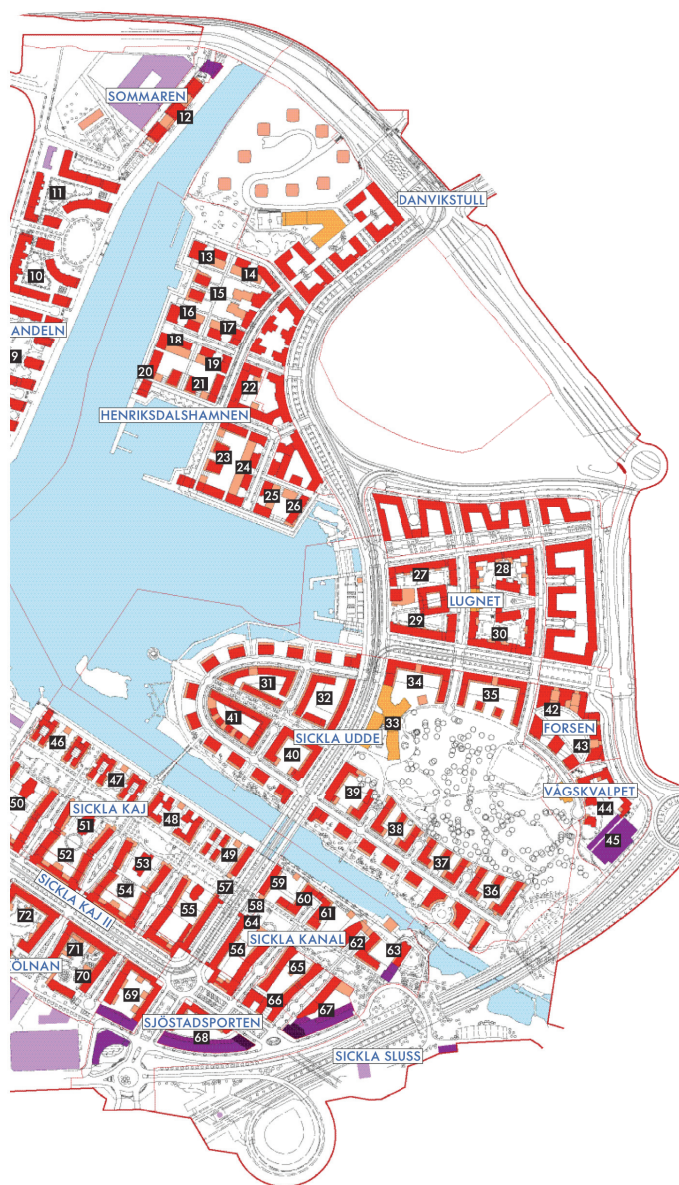


GLASHUSETT

57. Environmental Information Centre –
Stockholm Vatten, Fortum, City of Stockholm

SJÖSTADSKAPellet

58. Sofia Parish - Veidekke / Reflex Arkitekter



SICKLA KANAL

- 59. Reinhold Gustafsson / AQ Arkitekter
- 60. Einar Mattson / AQ Arkitekter
- 61. Besqab / FFNS Arkitekter
- 62. Lennart Ericsson / Johanson Linnman Arkitekter
- 63. Riksborgen / Folkhem / Jan Fidjeland Arkitektkontor
- 64. Katarinastiftelsen / FFNS Arkitekter

SJÖSTADSPORTEN

- 65. JM / Nyréns Arkitektkontor
- 66. Svenska Bostäder / Nyréns Arkitektkontor
- 67. Botrygg / Omniplan
- 68. Skanska / Erséus Arkitekter
- 69. Primula / Rosenbergs Arkitekter, Primula

KÖLNAN

- 70. Familjebostäder / FFNS Arkitekter
- 71. HEFAB / Lindberg & Stenberg Arkitektkontor
- 72. SKB / ÅWL Arkitekter
- 73. SSSB (student accommodation) / Murman Arkitekter
- 74. SISAB (school) / FFNS Arkitekter

GODSFINKAN

- 75. ByggVesta / White Arkitekter, Arkitektur-huset

PROPPEN / REDAREN / SJÖFARTEN

- 76. Familjebostäder / Rosenbergs Arkitekter
- 77. Borätt / AW Arkitekter
- 78. Primula / Thomas Eriksson Arkitekter
- 79. HSB Bostad / Rits Arkitekter
- 80. Einar Mattsson / Tengbom Arkitekter
- 81. LjungbergGruppen / Åhrbom & Partner Arkitektkontor

LUMA

- 82. Fabège / Murman Arkitekter

HAMMARBY GÅRD

- 83. HSB / AIX Arkitekter
- 84. Folkhem / Brunnberg & Forshed Arkitektkontor
- 85. Stockholmshem / Tengbom Arkitekter
- 86. Erik Wallin / Tengbom Arkitekter
- 87. Riksborgen / Tengbom Arkitekter
- 88. Fabège / architect not appointed
- 89. Fabège / (extension) Vegesack Arkitekter
- 90. Fabège / AIX Arkitekter
- 91. Fabège / architect not appointed
- 92. PEAB / Equator Arkitektkontor
- 93. Riksborgen / Tengbom Arkitekter
- 94. SKB / Wingårdh Arkitektkontor
- 95. ByggVesta / White Arkitekter

PÅSEN

- 96. Fabège / Tengbom Arkitekter

FRYSHUSET

- 97. Development office / architect not appointed
- 98. SISAB / Jack Pattison

MÅRTENSDAL

- 99. Development office / architect not appointed

FREDRIKSDAL

- 100. SL, Skanska / Brunnberg & Forshed Arkitektkontor
- 101. Skanska / ÅWL Arkitekter
- 102. Skanska / Kjellander + Sjöberg Arkitektkontor

APPENDIX M – Map of Western Harbor (Malmö, Sweden)



FACTS

- Västra Hamnen 160 ha
- Fully developed the area will consist of housing for 10,000, 20,000 will be working or studying in the area
- Malmö University is continuing its extensive expansion and moved into new premises by 2005
- Around 80 large and smaller companies are established in Västra Hamnen
- Today 6000 people are working in the area
- The Bo01-area is 25 ha
- 950 housing units have been completed by 2006
- Eight restaurants/café and seven shops have been established by 2006
- A new park will be ready 2007
- A private school started 2002
- Public school is planned
- Public transport serves the area every 7 minutes
- 290 millions SEK have been granted for environmentally related investments through the Local Investment Programme (LIP)