



Lithograph by Otto Krebs, 1874, showing bird's-eye view of the City of Pittsburgh, Pennsylvania from Mt. Washington. Image Credit [Wikipedia Commons](#)

## How Is Biophilic Urbanism Being Used in Planning to Rejuvenate Post-Industrial Cities?

By Andrea A. Kerley

### What I Asked and Why

I am impressed with older European cities that merge nature into their development with apparent effortlessness. Of course, it's easy for them, they're old, was my first thought when looking at cities such as Barcelona and Vitoria-Gasteiz, Spain, and Birmingham, England. Though the U.S. is not as old as most European cities, it does have old cities. Cities that have been functioning since before the founding of the country. The U.S. has a lot of post-industrial

(or "legacy") cities, many of which are not faring as well as Birmingham, a post-industrial city in the UK. Questions began to form in my mind: "What did Birmingham do to make a difference? Can those changes work in the U.S.?" I found the commonality in the Biophilic Cities Network (BCN). Two of the most iconic post-industrial cities in the U.S. (Pittsburgh and Milwaukee) are partner cities in the network, along with the aforementioned European cities.

What are some of the oldest

cities in the U.S. doing to bring nature into their spaces? For me, this is the most important aspect to be addressed when planning or rejuvenating a city. As I mulled over topics such as biodiversity, species specific planning for cities, community gardens, I remembered why I wanted to pursue a career in planning: to make cities the best that they can be so that people would want to live in them – in turn stopping urban sprawl and leaving the countryside in a state that can sustain rich biodiversity and provide complex ecosystems

for species as well as sustainable locally sourced food for people. Reviewing the transformation of many former industrial European cities into thriving sustainable communities, was the catalyst for reviewing the economic situation and population decline of many former industrial U.S. cities. These cities are ripe for rejuvenation. Many of them are empty with room to grow from the outside inward – a reverse sprawl needs to happen.

The purpose of my research was to discover if shrinking cities were incorporating green urbanism and biophilic actions into their master plans for the purpose of creating a sense of place and prosperity for people. The study hypothesized that various master plans of U.S. post-industrial cities, which are also members of the BCN, would emphasize biophilic urbanism

indicators more so than city plans from non-network cities. Through a review and evaluation of policies, plans, initiatives, and strategies of four U.S. post-industrial cities, two of which are in the BCN and two of which are not, I sought to compare how these cities are including biophilic practices.

### What I Found

The results of my research supported the hypothesis that post-industrial cities are using biophilic urbanism to merge nature with the built environment. Likewise, cities which are members of the BCN are more adept at doing so than post-industrial cities which are not affiliated with the network. Through this evaluation of community plans, several observations were outlined according to the endeavors

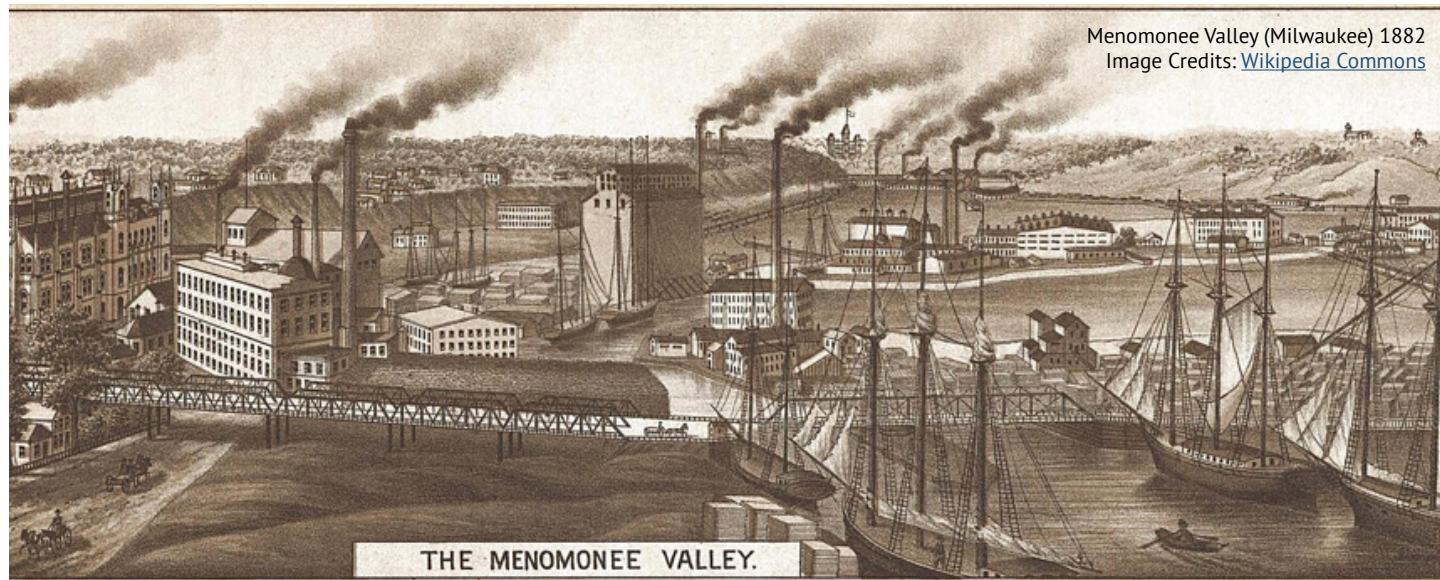
of these cities' rejuvenation processes: (1) post-industrial cities that are members of the BCN are better equipped to address the needs of the people and the environment than the cities that are not members of the network; (2) there are some indicators where both types of cities could improve; and (3) there are indicator scores in which neither BCN nor non-BCN cities scored well.

### Methodology

My study contained four categories: Factual Basis; Public Education and Community Outreach; Policies, Strategies, and Regulations; and Incentives. Each category had a variety of indicators that were developed based on qualities of biophilic urbanism and green urbanism within U.S. post-industrial cities. A total of 27 indicators were



Duquesne Incline at night, Pittsburgh  
Photo by Vidar Nordli-Mathisen on Unsplash



chosen to be included in the evaluation rubric. A literature review was undertaken to determine which indicators were the most important for a biophilic urbanism evaluation. The methodology relied on the evaluation protocol that was developed with the idea that biophilic goals can be achieved through city planning, policies, and strategies that incorporate multiple modes of green infrastructure. The development and implementation of biophilic urbanism and green urbanism through educational programs, adaptive reuse of buildings, utilization of vacant land to promote health and wellbeing, along with other green infrastructure practices can provide legacy cities a new approach to re-inventing their city brand. The cities that are members of the BCN performed better in all categories than the cities in this study that are not members of this network.

### Why This Matters

This research can provide a point of reference for other

cities to review when seeking to implement biophilic and urban greening goals. This research is valuable for post-industrial cities that must recover their populations and economies to meet the growing demand and needs of an ever increasing U.S. population. With an increasing awareness of environmental and social resilience, the need to rethink the methods of incorporating biophilic concepts into urban areas needs to be prominent within shrinking cities' plans (Beatley and Newman, 2013). As cities in the U.S. implement green projects and strategies, they are realizing that they must adapt and evolve; not just create new places (Moulton, 2019), and that the commitment and will of the population is a crucial element to the development of a sustainable city (Loures and Burley, 2016).

### How Cities Can Do Better Based on These Findings

The purpose of this research was to evaluate, through a biophilic lens, the approaches that four U.S. post-industrial cities have

incorporated in their city plans to achieve urban greening. According to Beatley, a biophilic city should be designed to have the following characteristics: a reduced carbon footprint; a resemblance of natural systems; a symbiotic relationships with the surrounding communities; a focus on locally sourced food, energy, and economy; facilitation of more sustainable and healthier lifestyles; and an emphasis on an overall high quality of life (Beatley, 2012). Based on review of the literature, the expectation was that the BCN partner cities would achieve this with greater efficacy than non-BCN cities by incorporating more biophilic indicators in their plans than cities that are not part of the BCN.

When reviewing the results of this study, plans from the four cities incorporate green urbanism to varying degrees. All cities in this study have fairly successful policies and strategies that support the foundational elements of reducing carbon footprints, caring for water sources, and addressing the

need for locally sourced food. However, when comparing cities' approaches through a biophilic lens, this is where the details of the policies, strategies, and plans could have a larger impact. There are three areas in which the cities in this study could improve that would be relevant to many post-industrial cities seeking to grow their populations and economies via a re-imagining process:

**Green Economy.** The overarching concept throughout the literature is that a green economy improves both the environment and the wellbeing of people (UNDSEASD, n.d.; Larson 2017; Martinez-Fernandez et al, 2010; Bowen et al, 2016). For example, a plan can mention its workforce development and creating jobs, which is a basic goal. However, a

more biophilic approach would be to include details of specific types of green jobs based on existing components or features found in post-industrial cities. Both BCN and non-BCN cities in this study scored lower than anticipated in green job training programs - workforce development. These cities are former industrial complexes. Their history manifests images of laborers, men and women making a new life and new cities. As part of their new image, green industries, along with the accompanying jobs, would be a reasonable transition for post-industrial cities to make. Also with the data showing that poverty rates and unemployment are a concern for de-industrialized places, (US Census Bureau, 2020) transitioning to a green economy is an ideal

opportunity that shrinking cities should be pursuing. These cities must do a better job providing innovative jobs for their communities to revitalize an industrial spirit for the 21st century.

**Government Capacity.** The capacity to design and implement a policy agenda is an ongoing challenge. To be successful, certain components need to be present, such as resources, the ability to make and carry out governing decisions, and stable partnerships that consist of non-governmental agencies that can leverage private resources (Reckhow, Downey, and Sapotichne, 2020). These elements show a baseline level of government capacity—the “six Cs”: coalition building, citizen involvement, conflict



management, compensation and rewards, cross-unit collaboration, and control (Padovani, Young, and Heichlinger, 2018). However, these components can also act as barriers to the implementation process if they are not enacted carefully. The BCN cities scored noticeably higher than the non-BCN cities in the plan implementation area. With such an obvious difference in this area between the two study groups, further study would be needed to determine if participating in the BCN is a factor in this difference, and what other possible causes might exist for slow or ineffective implementations. Many other areas in this research could have been scored higher if the local government partnered with other agencies or groups to meet the requirements for biophilic urbanism. This is where partnering with the BCN could be beneficial. In addition to partnerships, city governments need to determine if there are elements in place in their current departments that could improve their capacity to meet green urbanistic goals and thus support stronger local government services.

**Plan Implementation Gap.**

Post-industrial cities are using biophilic urbanism to merge nature and the built environment; however, some cities do this more effectively than others. Legacy cities which are BCN partner cities show more proclivity to include biophilic thinking into their city plans than similar cities that are not part of the network. Ensuring that nature is included in city planning to facilitate the biophilic needs

of people is a way for post-industrial cities to rejuvenate their surroundings and their economy, while meeting federal and state environmental requirements.

The BCN supports localities in achieving better environmental and economic results through improvements in green economy, government capacity, and plan implementation. C.J. van Leeuwen’s research supports the idea that cities can learn from each other and that active exchange of best practices can significantly improve similar efforts of cities (Van Leeuwen, C. J., 2013).

Government policy is the key to making these changes and usually the details of such change are left to individual localities based on a broad outline that is provided by federal and state governments. However, it is the struggling small to mid-sized cities, along with former manufacturing centers, that lack the economic capacity to adopt new frameworks for their economic plans. The development of human resources is the foundation for greening economies; technical training and vocational education at all levels play critical roles in the process of transforming cities.

The future of post-industrial cities relies on the ability to design their city in a way in which people will have a unique experience when visiting or living there. Biophilic urbanism and design would make this happen.

Though my research had its limitations, i.e. small study group, only one evaluator, and relative subjectivity, it does indicate that legacy cities write their comprehensive plans with more attention given to urban greening and biophilia when they are members of the BCN. However, when comparing basic census data for the cities in this study, there is no explicit correlation, but there are inferred benefits such as increases in the workforce, decreases in the number of those living in poverty and using government health care and food benefits. As the BCN grows, more research would support the inferred benefits of becoming a member of the network to meet the sustainability needs of cities.

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Below: Campus Martius Park Detroit  
Image Credit: Downtown Detroit Partnership

