Emscher Park IBA: International Lessons for Successful Industrial Reuse Planning

By
Christopher Lankenau

A Plan B Paper
Submitted to:

Michigan State University
in partial fulfillment of the requirements for the degree of:

MASTER OF URBAN AND REGIONAL PLANNING

College of Social Science
Urban and Regional Planning Program

Spring 1996

Acknowledgments

Several people are owed thanks for making this paper a reality. I would like to thank Dr. Zenia Kotval for her guidance, direction, and feedback. Had she not turned down several other paper options, a very important experience of mine would not have been enhanced. I would also like to thank Professor Miriam Rutz for her encouragement, enthusiasm, and inspiration throughout the writing process.

I would also like to thank friends and colleagues in Germany whose assistance has been invaluable. I must thank Dr. Irmgard Kucharzewski, who encouraged me to go to Germany last year, and provided wonderful company and hospitality while I was there. Dr. Christiane Ziegler was also very helpful, providing information through air-mail and e-mail. Lastly, I would like to thank Birgit Groening, my German exchange counterpart, for making my trip possible and comfortable. Her assistance and information provision is also tremendously appreciated.

Table of Contents

Executive Summary

This paper analyzes a major successful industrial reuse project in Germany and applies its principles to a similar area of the United States in desperate need of revitalization. By doing so, the attempt is to acknowledge lessons learned from the international example and utilize this knowledge to foster successful reuse efforts at home.

The Emscher region of Northrhine-Westphalia, Germany is introduced as a heavily industrialized region having an innovative industrial reuse program in place, known as the Emscher Park International Business Exhibition (the acronym translated as IBA). The anthracite region of eastern Pennsylvania, with its abandoned steel industry in Bethlehem, is the area to which the reuse concept is applied. Both the Emscher and anthracite regions have much in common, such as their history, economy, and landscape. These commonalities provide the basis for a successful international reuse application.

The Emscher region of Northrhine-Westphalia, Germany, has traditionally been an area of coal mining and steel production. After one hundred years of heavy industry devastated the Emscher landscape, the industry's collapse devastated the economy. A revolutionary Emscher Park IBA industrial reuse concept was initiated in 1989 to combat these problems. The massive reuse plan incorporates state of the art design and planning principles while involving local residents, artists, and the unemployed.

The Emscher Park IBA concept has five primary types of reuse projects: 1.) the preservation and conversion of industrial heritage sites to alternative uses; 2.) the protection and reclamation of open spaces under the regional project called the Emscher Landscape Park; 3.) the development of vacant, unused industrial land under the motto "Working in the Park;" 4.) housing construction and integrated urban district development; and 5.) the environmental cleanup of 220 miles of the Emscher River.

Having investigated the Emscher Park IBA success, the anthracite region of eastern Pennsylvania is examined. Its history is similar to the Emscher region. A destructive coal and

steel industry has left the economy and environment in a formidable condition. Certain counties in the anthracite region have experienced as many as 26,000 coal mining job losses in ten years. In addition, the steel industry in Bethlehem, once employing 32,000 people, has collapsed. As a result, this region needs a major industrial reuse project to help revitalize its poor condition. Pennsylvania's traditionally tough environmental cleanup laws have made this a difficult task.

There are many indicators present in the anthracite region alluding that a successful industrial reuse project, such as the Emscher Park IBA, is possible there. The anthracite region has several regional advantages that make the Emscher Park IBA idea quite feasible. These include its proximity to millions of people, its proximity to the fastest growing metropolitan area in Pennsylvania, the abundant recreational opportunities nearby, the several major educational institutions nearby, and the region's excellent transportation network. To further indicate likely success, Pennsylvania has recently initiated a new plan intended to facilitate the environmental cleanup of old industrial sites, making a massive industrial redevelopment project in the anthracite region more feasible.

Industrial reuse efforts have slowly begun to move forward in eastern Pennsylvania, a final indicator that a revitalization plan could work in the region. A non-profit agency called the Earth Conservancy has purchased several thousands of acres within the anthracite area with the intent to revitalize the region. In Bethlehem, local officials and residents are soliciting ideas for the reuse of its huge steel factory.

The Emscher Park IBA concept has involved several factors critical to its success, all of which the anthracite region should follow to ensure success for a similar industrial reuse program. These include the building exhibition concept, organizational factors, financing, the need for community input, and the variety of projects involved. Any plans for industrial reuse in eastern Pennsylvania should involve as many of these proven factors as possible.

To conclude, the Emscher Park IBA concept is a feasible solution for the anthracite region. The lessons learned from another country's successes must not be underestimated.

Introduction

Industrial reuse is a procedure practiced throughout the world. Specifically, it entails the renovation and conversion of sites and structures once used for industrial purposes into new, and often more modern, functions. This paper analyzes a major successful industrial reuse project in Germany and applies its principles to a similar area of the United States in desperate need of revitalization. Thus, the research question is raised: Can an innovative industrial reuse solution cross international borders and be successfully implemented in the U.S? In answering this, the attempt is to acknowledge lessons learned from the international example and utilize this knowledge to foster successful reuse efforts at home.

The Emscher region of Germany is Europe's industrial heartland, located in the northern Ruhr valley of the state of Northrhine-Westphalia. Being the heaviest industrial and most densely populated area of Europe, the region has experienced complete economic and environmental devastation due to a collapsed coal and steel industry. Out of the sheer necessity for developable space, Germany has led the way in terms of industrial reuse innovation. Recently a massive project called the Emscher Park International Building Exhibition has begun to turn the Emscher region into the revitalized envy of every depressed post-industrial area.

The anthracite region of eastern Pennsylvania, so called for its former abundance of anthracite coal, along with its steel production in Bethlehem, shares a remarkably similar history, economy, and landscape with the Emscher region. Much of the area remains what the Emscher region had been in the past - a depressed industrial wasteland in desperate need of a regenerated landscape and revitalized economy. Although the anthracite region has not been necessarily searching for a comprehensive industrial reuse solution for its coal mines and steel factories, one must be sought now if the region is to be salvaged. As an impressive model for any industrial reuse situation, the Emscher Park IBA concept is the best solution yet.

Methodology

The idea for studying the Emscher Park International Business Exhibition industrial reuse concept, and applying it to the United States, was conceived during a two month internship conducted in Dortmund, Germany in May and June of 1995. Through the internship, I had the fortunate opportunity to attend a four-day conference sponsored by the Emscher Park IBA, held at the Duisburg-North Landscape Park. The conference involved several lectures given by planners, architects, and historians from around the world discussing industrial reuse ideas and examples in their own countries. Also part of the conference were numerous excursions to most of the Emscher Park IBA projects throughout the entire Emscher region. Witnessing one of the most heavily industrialized landscapes in the world and its incremental recovery through Emscher Park IBA projects has forever changed my own concept of industrial reuse, enough to want to write about it.

Having grown up only two hours from the anthracite coal region of eastern Pennsylvania, I am quite familiar with the area's economic depression and abandoned landscape. While in Germany at the IBA conference, I thought of how much the Emscher region reminded me of the anthracite region. While touring the reuse project sites, I wondered if such a concept could revitalize the similar-type region in Pennsylvania. Thus, the topic was originated.

The analysis for the study has been strictly qualitative. Aside from primary information, materials were gathered in Germany, and more were sent from the Emscher Park IBA. The documents were reviewed for unique industrial reuse information and examples of Emscher Park projects. Information gathering for the anthracite region involved books, maps, newspaper articles, and a great deal of personal knowledge.

Two Regions with Much in Common

The simple fact that the Emscher region and eastern Pennsylvania have many regional commonalities gives hope to revitalizing the anthracite region. One must wonder, if it can be done in Germany, can't it be done in Pennsylvania?

As economic and environmental reconstruction successfully progresses in the Emscher region of Germany, the anthracite and steel region of Pennsylvania continues to struggle with its industrial history, economy, and landscape. Major commonalities, however, lie in the condition of each region as a result of the coal and steel industry. The Emscher Park International Building Exhibition has turned otherwise negative consequences of such industries into motivation for positive change. Therefore, as the IBA continues to preserve the history, revitalize the economy, and regenerate the landscape throughout the Emscher region, the commonalities between the Emscher region and the anthracite region give justification to the fact that such a reuse concept could work in eastern Pennsylvania. Thus, this region has been chosen for the Emscher Park application.

History

The histories of the Emscher region and the anthracite region are full of commonalities. Each area was relatively unsettled until the mid 1800s when the coal industry began in full force. In Northrhine-Westphalia and Pennsylvania, the coal and steel industry continued to grow at a miraculous rate until a production peak was reached during World War II. With diminishing profits from decreased demand and other means, the industries continued to fail ever since in both places until almost every coal mine and steel factory closed.

The historical decline in the Emscher region has ended thanks to the Emscher Park IBA project. Having the same industrial history, the anthracite region could undoubtedly apply the same reuse concepts from the Emscher region to its own sites. Such a reviatlization program would ensure that a history of hard times in the coal and steel region would not repeat itself.

Economy

Economically, the Emscher and anthracite regions share a common bond. Both economies were completely dependent on a single industry - coal, although steel became just as important. One-industry regions are doomed for eventual economic failure. Once it hit both areas around the same time, unemployment was inevitable. As the unemployed migrated away to more fruitful locations, the area economy suffered. Abandonment, infrastructure deterioration, and hard times were consequences common to both regions.

Today, the Emscher Park IBA is successful in providing employment and retraining to former miners and steelworkers. It is bringing in new high-tech businesses to occupy abandoned ones. It is also creating urban vitality in once-depressed cities. Such economic turnaround is exactly what the anthracite region needs. Therefore, an area that experienced the same declining economic conditions from the same collapsing industries, but completely reversed the situation, would make a perfect model for other such regions to do the same.

Landscape

The Emscher area unquestionably has the most destroyed landscape in all of Germany, as does the anthracite region in Pennsylvania. Years of thoughtless mining and manufacturing has taken a major ecologic and aesthetic toll on the environment. In both regions, sheared hillsides, slag piles, smokestacks, abandoned infrastructure, and polluted waters, such as the Emscher and Lehigh Rivers, were in abundance.

As much of this remains in Pennsylvania, the Emscher Park IBA has been cleaning up the polluted environment and slowly mitigating the landscape. At the same time, it is reinforcing the fact that an ugly landscape can actually be improved, utilized, and appreciated. In the anthracite region, an improved landscape awaits. With such parallels drawn in past landscape destruction, it is difficult to imagine better reuse ideas for the anthracite region than those found in Emscher Park.

The Emscher Region of Northrhine-Westphalia, Germany: A Region with an Industrial Reuse Solution

The Setting

Emscher Park is a designated region within the northern Ruhr valley of Northrhine-Westphalia, Germany (see Figure 1). The region stretches from the city of Duisburg on the west to the city of Dortmund on the east, encompassing the Emscher River and seventeen cities. Such major cities include Duisburg, Gelsenkirchen, Oberhausen, and Essen (see Figure 2). The Park is only a few miles wide from north to south, but amounts to approximately 310 square miles in area and contains some 3 million inhabitants.

The Industrial History of the Emscher Region

As late as the mid-nineteenth century, the Emscher region was a quiet agricultural society inhabiting under 300,000 people. Today, the Emscher region is home to over three million. The explosive growth was a result of a new industry to the Emscher region, coal mining, which began in 1838 (Kiedrowski and Bodenstein, 1994). That year, the first mining operation began in Essen. Just four years later, the mine was abandoned due to an unexpected lack of profitable coal and an unfavorable location for mining. A second shaft was drilled in 1839 also in Essen, near the present main train station in the center city. This mine was twice as deep and far more profitable than the first. Soon after, many operations followed, totaling 300 by 1857. By the 1950s, however, this trend began declining, and pits increasingly began to close.

The steel industry in the northern Ruhr region grew around the coal industry, becoming fully viable by 1870. By that same year, some 50,000 workers had arrived from outside the region to find employment with the booming new industries. The largest group of immigrants to the Emscher region were from Poland, numbering 70,000 by the turn of the century, and comprising more than one third of the entire workforce in the Ruhr mining industry.

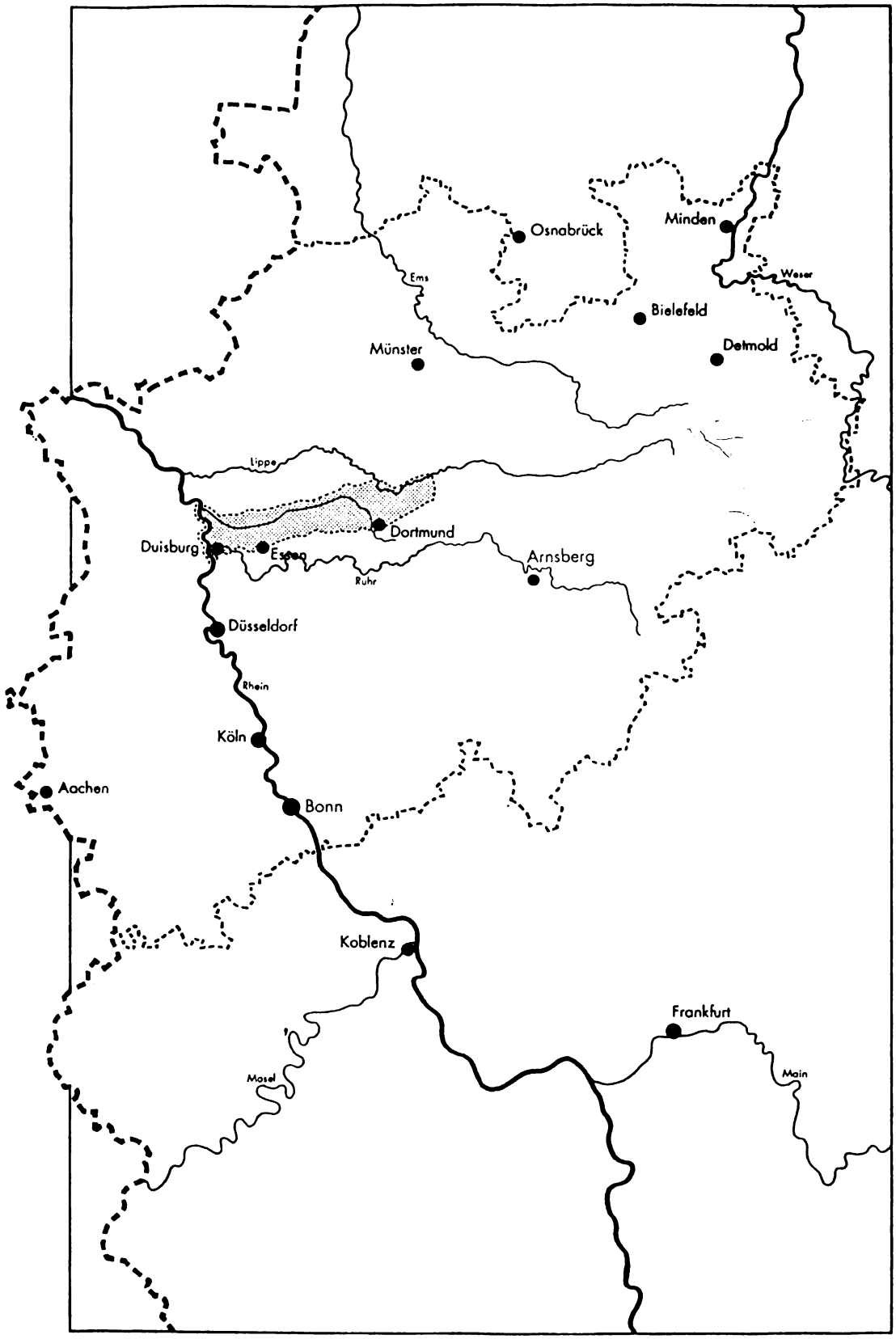


Figure 1. The State of Norhtrhine-Westphalia, Germany.

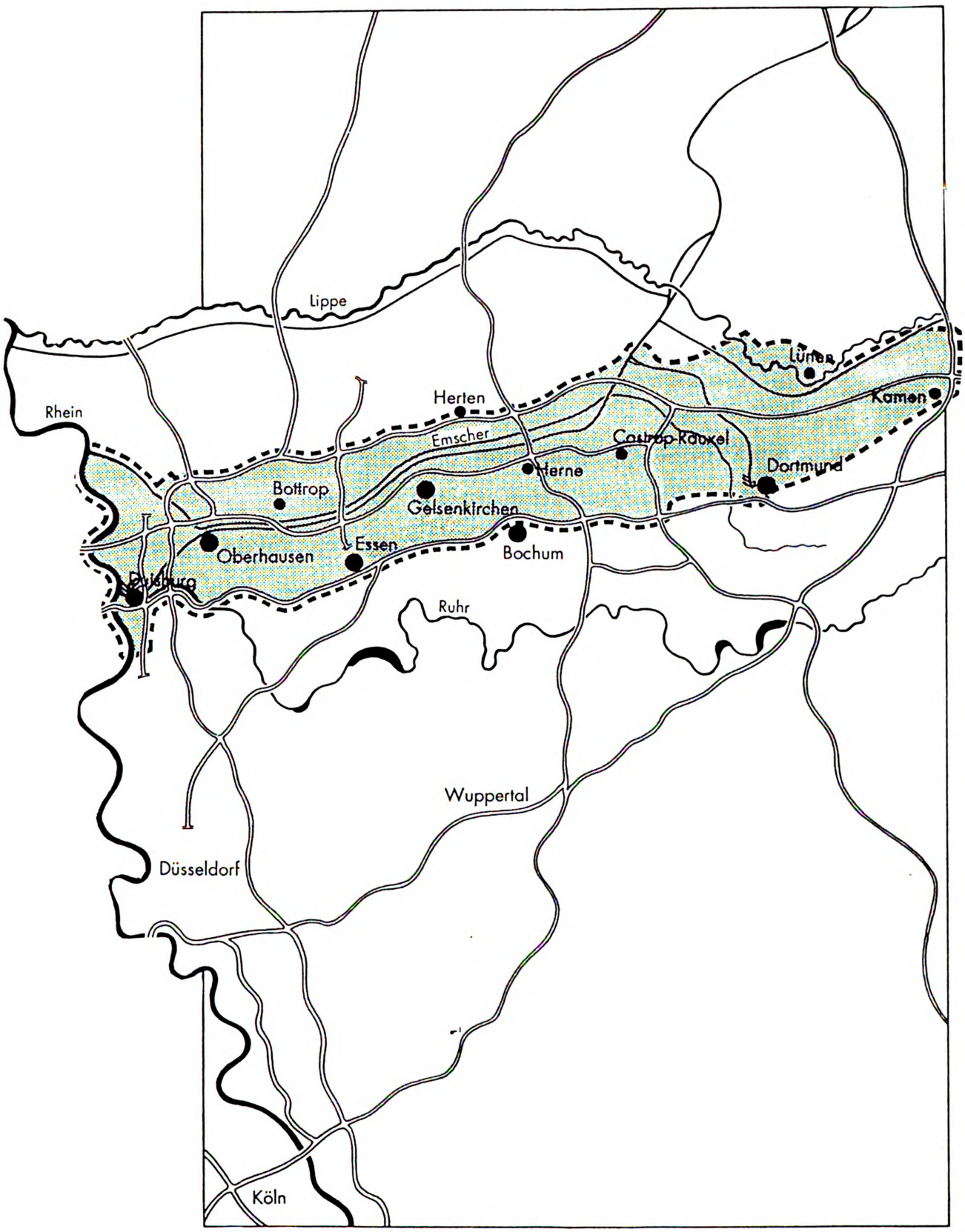


Figure 2. The Emscher Park IBA planning area.

The period immediately preceding World War I was an extremely productive time for the Emscher region. By 1913, a record 114 million tons of coal were produced. During the war itself, production had fallen, although demand for coal and steel was at an all time high. Also at a record high were the number of employees in the coal mining industry, numbering an extraordinary 545,000 by 1922. During Nazi rule, coal production flourished in the northern Ruhr valley. The highest annual production figure of all time, 130 million tons, was recorded in 1939. In planning for World War II, Hitler needed coal and steel for tanks and cannons. Although there were times when gaps in the workforce were prevalent during the war, mandatory labor and prisoners of war helped to keep the record production around 130 million tons annually for the next five years (Kiedrowski and Bodenstein, 1994).

At the close of World War II, the coal and steel enterprise of industrial Germany suffered great damage from wartime bombings. The Ruhr region was paramount in regenerating the economy of Germany following the war, both locally and nationally. However, by the late 1950s, crude oil had begun to replace coal as an efficient energy source. As coal production continued, sales began to decline. In 1968 the Emscher area mines, which were operating at a loss, were incorporated into one large company, Ruhrkohle AG. By 1976, only 35 out of 148 mines were operating and the workforce had dropped from 400,000 miners to 150,000. Today, 16 mines remain open, and steel manufacturing is limited to the cities of Duisburg and Dortmund.

The decline of such a huge industry has resulted in serious economic ramifications over time, as it would anywhere. In the Emscher region, mining and its accompanying industries, was the economic backbone. This industrial loss left the economy weak and the landscape ravaged. As a result, the federal government of Germany, as well as the state government of Northrhine-Westphalia, began searching for new solutions and perspectives for the future.

The Emscher Park IBA Industrial Reuse Concept

The primary challenge facing the Emscher region today is urban and ecological renewal to serve as a basis for new economic development. Specifically, this involves the reuse of industrial facilities, such as coal mines and steel factories, in a planned and thematic fashion. The Emscher Park International Building Exhibition was established to accomplish this large feat. Initiated in 1989, the plan is scheduled to run for ten years and be fully implemented by 1999.

From the beginning, the forefront of concern throughout the entire Emscher Park IBA redevelopment process has been linking the area's economic recovery to the restructuring of both the natural and urban environments. With land being a scarce commodity in the Emscher region, and all of Germany for that matter, the question of reusing land has become an utter necessity. Thus, the Emscher Park concept has brought together planning specialists and politicians to effectively address the challenge of renewing industrial sites in Germany's heaviest industrial area.

Building exhibitions have a long and successful history in the German planning and architecture fields, dating back to the mid-nineteenth century (Zerressen, 1996). Their original purpose was to present innovations in building technology through exhibitions, which would result in shared and improved concepts for future projects. The Emscher Park IBA is indeed making a concerted effort to continue this spirit through its state of the art solutions for industrial regeneration.

Organization

The massive reuse idea was staged by the state government of Northrhine-Westphalia out of the need to devote immediate attention to regenerating the land and economy of the Emscher region. Accordingly, the state created a small planning company, translated as the Emscher Park Planning Company Ltd., to coordinate the redevelopment efforts and take responsibility for the completion of the project.

An important and unique element of Emscher Park is the use of architectural and urban design contests to promote sound ideas and designs for land as well as building reuse (Zerressen, 1996). The primary task of the planning company is to stage these competitions for Emscher Park projects and implement the results in coordination with project organizers. Workshops are set up at specific reuse sites to ensure that solutions take into account site specifics, while at the same time they encourage teamwork among the competitors. The Emscher Park Planning Company Ltd. also acts as an intermediary throughout the planning process and supervises the final presentation of the Building Exhibition.

Another important organizational element is the Building Exhibition Steering Committee, responsible for decisions regarding the actual projects to be undertaken. Under the leadership of the state's Secretary of Transportation and Urban Development, this committee draws together representatives of the state government of Northrhine-Westphalia, involved municipalities, industry, trade unions, nature conservancy agencies, and planning and architecture associations. A Board of Trustees is chaired by the President of Northrhine-Westphalia, and includes public figures whose combined task is to promote Emscher Park and its completion (Emscher Park IBA, 1989).

Finance

An undertaking of the Emscher Park IBA magnitude requires a great deal of resources, innovation, and time. However, the availability of funding may be the most critical factor for such a project to be fully realized. The entire project is essentially financed through a major public-private partnership. Public aid has come in the form of structural development funds from both the national government and the European Community.

The state of Northrhine-Westphalia has also created special funding programs solely for the Emscher Park IBA. A total of 36 such programs have been developed and special budgets have been created for each, including urban renewal, business development, housing improvement, employee training, and coal field redevelopment. Thus, a particular Emscher Park

project will receive state monies from its respective funding program. The Emscher Park Planning Company Ltd., owned and funded by the state, has its own operating budget.

Private funding sources have included major German corporations, Emscher Park companies, and individuals committed to a renewed industrial region. The latest figures indicate that private investments have totaled nearly 800 million Deutchmarks. The public expenditure has amounted to more than 1.7 billion Deutchmarks (Zerressen, 1996).

For the People...

A major theme of the Emscher Park IBA is the involvement of residents and others before, during, and after the project is completed. This falls in the form of participation, employment opportunities, and culture.

Throughout the entire Emscher Park redevelopment process, public participation and input is an ongoing concern. Civic involvement and cooperation tends to vary according to each project. Nonetheless, industrial reuse planning requires understanding and motivation from planners, builders, and tenants alike. Ultimately, active public involvement and commitment is essential for the success of individual projects. In cases where the public has demonstrated interest and involvement, quality suggestions have indeed been implemented.

Employment opportunity is an important factor of the Emscher Park IBA. By involving those who are out of work, the redevelopment process provides them opportunities to gain new qualifications as economic structure and change progresses. Such experience includes ecological planning and the operation of techno-ecological systems, which provides a double advantage for society in general. First, the concept of industrial reuse with an environmental theme is a field of increasing job opportunities which offers the long-term, skilled unemployed a better chance of reintegrating back into today's job market. Second, as environmentally conscious agencies are offering the unemployed opportunities to gain experience in this field, they are given greater freedom to be innovative with industrial reuse concepts having enthusiastic new employees.

The cultural dimension of Emscher Park IBA enters with the overall development objectives of renewing an old industrial region. A major priority is preserving the regional identity, which is heavy industry, through the preservation of buildings and the region's social culture (Zerressen, 1993). The inclusion of artists into the early planning process is an innovative method for accomplishing the preservation goal. The process encourages artistic competitions, in which artists develop their design and reuse ideas. With Emscher Park IBA having the objective of merging construction and artistic input throughout the industrial renewal process, an important contribution is made to the cultural life of the region.

Project Categories

Presently, there are 92 projects associated with the Emscher Park IBA. With ecological concerns and sustainability being top priorities for the park concept, the various projects are creating new approaches toward working, housing, and leisure activity environments. As a result, the term park has both a literal and figurative meaning. Not only is a natural park being created, but industrial, office, and leisure parks will comprise Emscher Park as well.

The Emscher Park IBA concept can be divided into five primary fields (Zerressen, 1996): 1.) the preservation and conversion of industrial heritage sites to alternative uses; 2.) the protection and reclamation of open spaces under the regional project called the Emscher Landscape Park; 3.) the development of vacant, unused industrial land under the motto "Working in the Park;" 4.) housing construction and integrated urban district development; and 5.) the environmental cleanup of 220 miles of the Emscher River.

The Preservation of Industrial Buildings

Perhaps the most important duty of the Emscher Park International Building Exhibition is finding new uses for factory and coal mine sites while preserving the industrial heritage they represent. The industrial plants, mines, foundries, tailing heaps, transportation facilities, and warehouses are all crucial elements of the industrial landscape. Because the Emscher region is

so heavily industrialized, these sites serve as the area's historic and architectural identity. Thus, the Emscher Park IBA has incorporated historic preservation into its overall reuse concept to save many outstanding representative structures of an industrial era and increase the public awareness of their significance.

The preservation of industrial landmarks is often a costly process. Furthermore, the sheer size and architectural style of early twentieth-century industrial buildings makes preservation difficult. Once renovated, the maintenance of such extraordinary structures is another expensive consideration. As a result, it is inevitable that only some of the most significant industrial relics can be selected for the sake of preservation alone. The preservation of many industrial monuments is, however, being implemented within the framework of Emscher Landscape Park, Working in the Park, and Housing Reconstruction and Urban Integration projects.

Impressive examples of industrial preservation are present throughout the Emscher Park IBA projects (Zerressen, 1996). Among the most outstanding industrial monuments in the Emscher region are the pithead buildings of the former Zollverein colliery in the city of Essen (see Figure 3). This landmark, well-known among European preservationists, planners, and architects, has been nicknamed the "Cathedral of the Ruhr" and "the most beautiful colliery in the world" for its unique design and architecture (Zerressen, 1993). Shortly after its closure in 1987, the entire Zollverein complex was listed as a national historic monument on the Register of Historical Places.

New uses sought for the colliery have been in the area of arts and culture. A number of building renovations on the site have been completed and are being used as art exhibition and events halls. The former boiler house will soon become home to the Northrhine-Westphalia Design Center. All of the renovated facilities are to be part of a museum exhibit along an "industrial culture path" that will cover the entire site.

Another historic industrial highlight of the Emscher region is the Gasometer, located in the city of Oberhausen (see Figure 4). The gasometer is the largest such structure in Europe, originally used as a massive storage tank. The height of the facility is 380 feet, equivalent of a

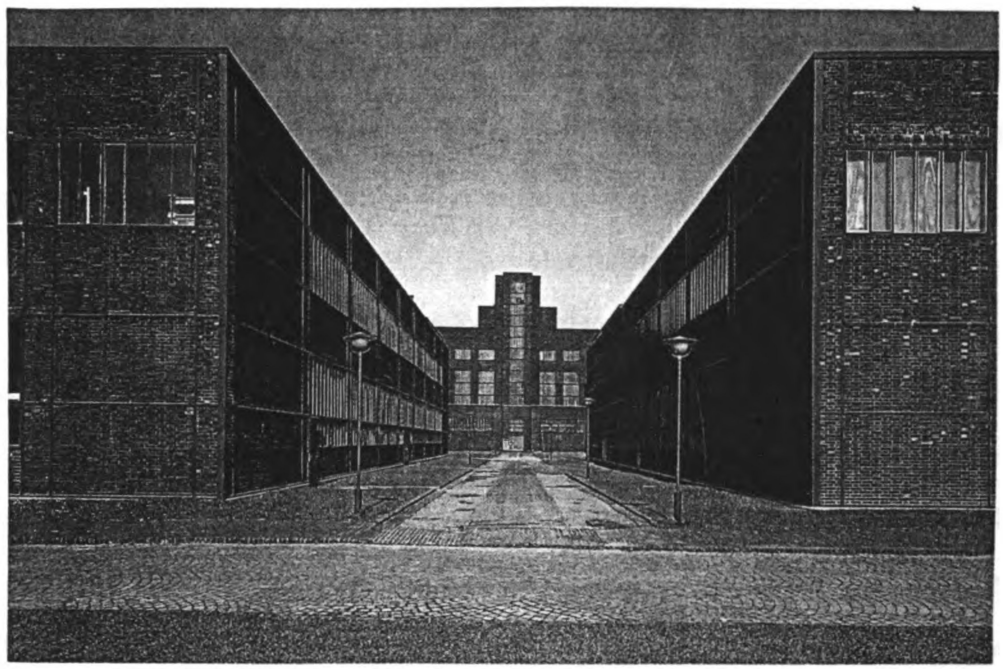


Figure 3. The pithead buildings of the former Zollverein colliery near Essen.

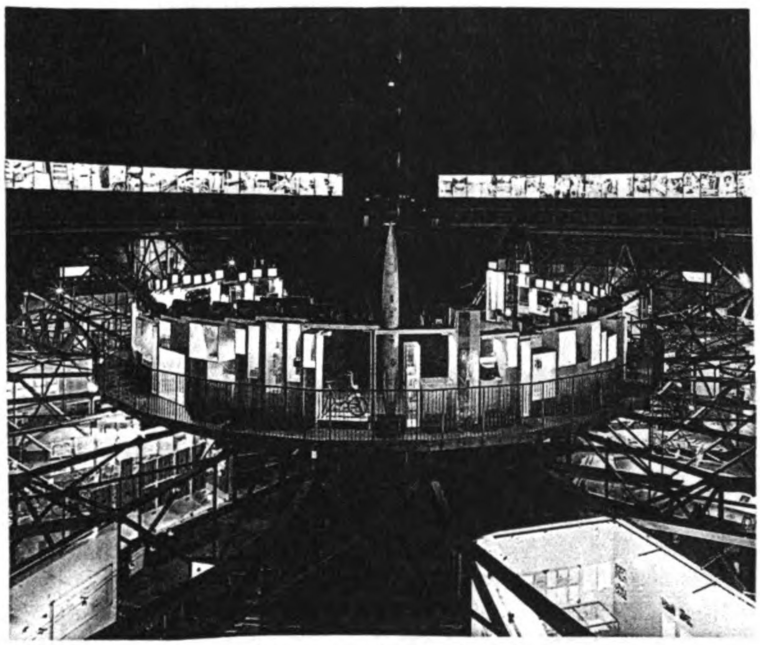


Figure 4. The famous Gasometer in Oberhausen, home of the Fire and Flame exhibition.

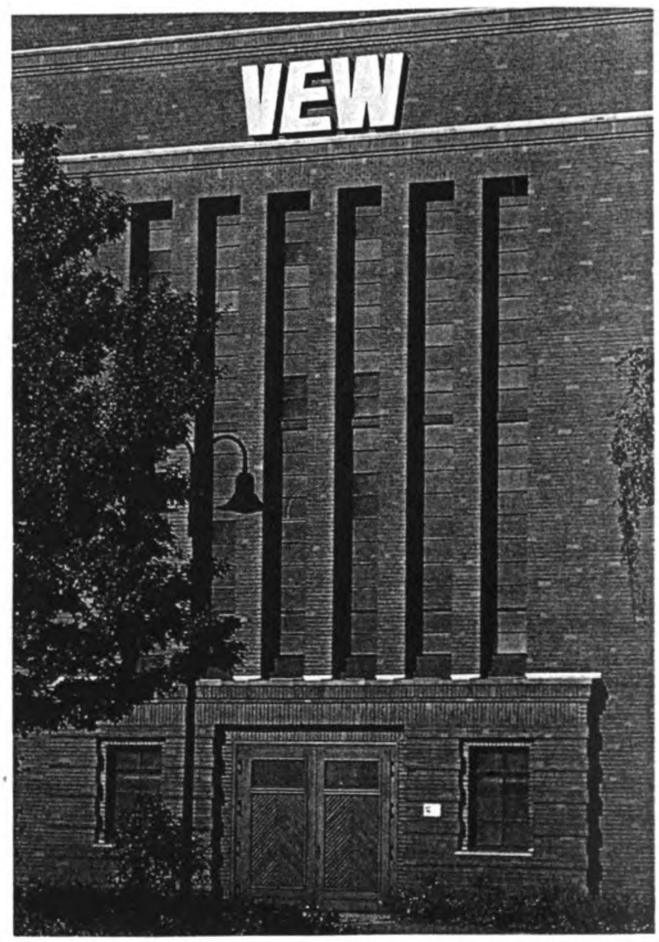


Figure 5. The VEW transformer station in Recklinghausen, today used for the same purposes.

25-story building, with a diameter of 223 feet. The popular "Fire and Flame" exhibition has been a favorite over the last year, offering a unique historical rendition of industry in the Ruhr region. The gasometer consists of a main floor for museum displays and exhibitions, as well as a large circular central display one floor above. A glass elevator takes visitors to the top where they can view the incredibly dense industrial landscape surrounding the gasometer in every direction.

The main transformer station in the city of Recklinghausen serves as another example of preserved industrial heritage, shown in Figure 5. Built in the late 1920s, the structure is a classic representation of industrial architecture of the era. Its unique quality lies in the fact that it has been restored to its original function as a transformer but with ultra-modern equipment, thus successfully blending history with technology. Engineers and architects worked together to develop the structural and technical solution, allowing both the form and the function to be truly preserved.

Emscher Landscape Park

Although the Emscher region contains a large amount of actual green space, it becomes obscure amidst a landscape of heavy industry. Immediately adjacent to any form of natural beauty are industrial sites, waste heaps, open sewers, roads, and railway lines. Within the structure of the Emscher Park International Business Exhibition, seventeen cities from Duisburg to Bergkamen have joined efforts with the Association of Ruhr District Local Authorities to create a continuous green space called Emscher Landscape Park. An estimated 115 square miles of land traversing the Emscher region are to be protected, regenerated, and linked together by the creation of new paths (Emscher Park IBA, 1989).

Because the Emscher Landscape Park is such a massive effort covering a large area, a great deal of coordination between municipalities and the Association of Ruhr District Local Authorities is necessary. As a result, the association has taken responsibility for the master planning of the entire project, while the cities have formed intermunicipal groups to undertake

the planning on several north-south green corridors. A long east-west green corridor intersects each, forming the landscape park's green network. Within each north-south corridor is a model reuse project demonstrating the various features of the park.

The Emscher Landscape Park is intended to represent a unifying theme for the entire Emscher Park IBA. The concept can result in a permanently improved environment for the residents of the Emscher region by connecting isolated open spaces, reestablishing a natural landscape, and improving the environmental and visual quality of the surroundings. At the same time, such a park returns the once-heavily industrialized landscape back to its residents for non-destructive, environmentally-friendly reuse.

As mentioned above, the green corridors contain several industrial reuse projects that offer various leisure and recreational opportunities (Zerressen, 1993). Perhaps the most impressive is the Duisburg-North Landscape Park. Encompassing thousands of acres, this unique park essentially leaves the landscape and its industrial structures as is.

The center of the park is an abandoned steelworks which poses as an outdoor industrial museum with signage guiding visitors through its intricate maze to a lookout at the top. At the same abandoned factory, climbing enthusiasts regularly practice on the walls of former coal storage areas (see Figure 6). And at adjacent steelworks buildings on the site, many a IBA convention and symphony concert is held in chilly halls among once-functioning pipes, chambers, and industrial equipment (see Figure 7). The beauty of the Duisburg-North Landscape Park is its absolute functionality with practically no renovation or landscape improvement involved.

In the Gladbeck area of the Emscher Landscape Park lies another noteworthy feature, the Mottbruch waste heap. The huge tailing heap is being created from excavated waste brought from area mines, totaling about 22 million tons when completed. The purpose of the project is to let waste become a functional part of the landscape. The ten year project will involve local artists who will shape the hill as it builds up. Tailing heaps have become popular recreational

Figure 6. Rock climbers scaling a wall in Duisburg-North Landscape Park.

Figure 7. A symphony performing in Duisburg-North Landscape Park.

areas in the Emscher region. Once grassed over, they are commonly used for hiking and climbing. Thus, they are a welcome addition to the organized Landscape Park.

To make the Emscher Landscape Park accessible by all, a system of signed bicycle and walking paths have been created. The paths conveniently connect many of the industrial highlights of the Emscher Park IBA projects, essentially following the north-south and east-west green corridors. With a length totaling approximately 250 miles, the paths successfully function as a means of both transportation and recreation (Zerressen, 1996).

"Working in the Park"

To a great extent, the economic and physical renewal of an old industrial area depends on the arrival of new businesses to the region. At the same time, providing high quality sites for such businesses is extremely important to attract them. Throughout the entire Emscher region there are many favorable business sites at former locations of coal mines and steel factories. Under the Emscher Park International Building Exhibition sponsorship, 22 projects are currently underway to produce a series of commercial, service, and science parks (Zerressen, 1996). A commonality among each is the large amount of green space and the high architectural integrity involved. The plan for each individual reuse project incorporates the particular needs of the businesses that will occupy the space.

Like other projects of the Emscher Park IBA, there are several goals involved in the conversion of industrial sites to office uses. The "Working in the Park" theme strives to integrate the redevelopment into the natural and existing surroundings, while preserving as much open space as possible. Another goal is to adhere to an overall urban development concept, with a mixture of housing and cultural options nearby. Also, architectural quality is of utmost importance in each reuse case, monitored by predetermined building and design standards (Emscher Park, IBA, 1989). Incorporated into each development project are environmentally friendly building techniques, especially in terms of the materials used for reconstruction. Finally,

a conscious effort is made to ensure that all new business sites throughout Emscher Park are served by public transportation.

Two major themes have been prevalent among the new businesses in the Emscher Park region. The businesses tend to be in the high-tech industry, and are supported by special provisions to promote their success. Several business incubators have been created to attract new and small businesses to the various former industrial sites. The intention of a high-tech theme among new businesses is to promote the Emscher region as a center of advanced technology. The other feature of the new businesses is their environmental theme. Such companies can be found in the form of environmental consulting firms and manufacturers of environmentally sound products.

Several examples of "Working in the Park" projects exist, as many are under construction or have already been completed (Zerressen, 1996). The reuse innovation involved in all of the projects is quite spectacular. In the city of Oberhausen, the Technology Center for Environmental Protection contains public and private research organizations with a common focus on the planning, technical, and analytical aspects of environmental protection. The agencies are housed in a combined historic former steelworks guest house and a new section recently built (see Figure 8). The Rhienelbe Science Park in the city of Gelsenkirchen, shown in Figure 9, is located at the site of a former steel factory and at the neighboring site of the former Rhienelbe coal mine. The facility has become a center for energy innovation.

In the city of Bottrop, a former coal mine site is now the headquarters for the Arenberg Business Start-Up and Technology Center. This business center intends to attract innovative companies in the fields of environmental technology, computer graphics, and electronics. Thousands of square feet of office space are available in the renovated pit buildings as well as a new adjacent building (see Figure 10). Finally, the Eco-Center in the city of Hamm, located on the site of a former coal mine, has become a forum for the entire gamut of environmentally oriented urban development. The old machine hall is being used as a trade and exhibition center

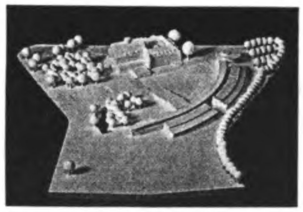


Figure 8. The Technology Center for Environmental Protection in Oberhausen, and its model.

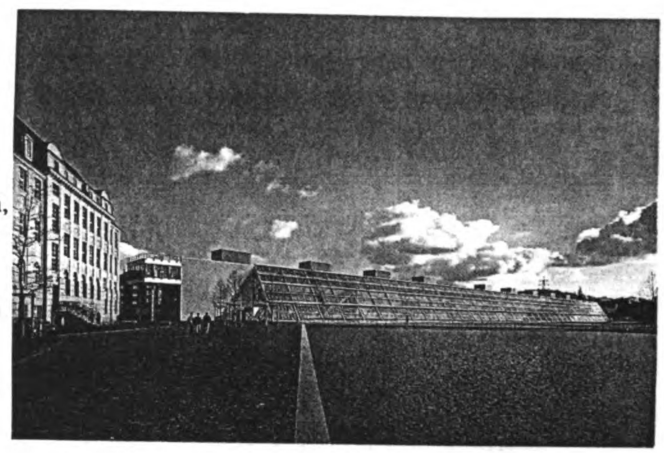


Figure 9. The Rheinelbe Science Park in Gelsenkirchen, formerly a steel works.

Figure 10. The Arenberg Business Start-Up Center in Bottrop, formerly a coal mine.

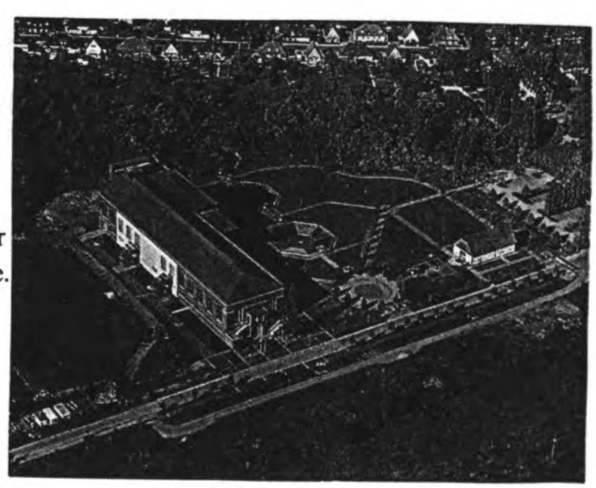


Figure 11. The Northrhine-Westphalia Eco-Center in Hamm, the site of a former coal mine.

and the former mine's administration building houses the center's headquarters. A training center and commercial park are currently under construction on the site as well (see Figure 11).

Housing Reconstruction and Integrated Urban Development

Housing is an important element of the Emscher Park International Building Exhibition due to the fact that millions of people live within its designated area. The 26 housing projects that are part of the Emscher Park IBA are playing a major role in the area's urban development, the reuse of vacant sites, and the development of residential and commercial parks. Currently, there are 3,000 new apartments in either the planning or construction phases, and another 3,000 are being renovated in old workers' settlements, or company towns as we know them (Zerressen, 1996).

While the goal of improving available housing in the Emscher region is being pursued and accomplished, a very important issue is being administered at the same time. The Emscher Park housing projects are important elements of reviving unused land within urban districts among the industrial sites. The result is new growth within the existing development, giving a renewed life to depressed urban areas.

The construction of new housing has played a large role in the urban renewal of Emscher area cities. Many of the projects have involved a "new town" concept in which large numbers of dwellings have been built, along with the accompanying infrastructure, stores, schools, and public transportation links (Emscher Park IBA, 1989). One such new development in the city of Bergkamen was designed by all women architects. Their aim was to be creative with the design of new public housing, while taking into consideration the needs of women (see Figure 12). Another new housing project, in the city of Herne, involved the demolition of a garden city type of worker settlement and the construction of new housing in its place that emulated the old architecture of the original settlement. During the entire construction process, tenants were closely involved in the planning process.

Figure 12. Housing, planned and built by women, in Bergkamen.

Figure 13. A workers' settlement in Bottrop, one of the largest and most attractive in the Ruhr.

Figure 14. A renovated traditional miners' settlement in Gelsenkirchen.

The other major type of housing improvement taking place is the modernization of housing in old worker settlements or company towns. This has involved a creative combination of both renovation and preservation. The city of Bottrop contains a settlement with over 1,000 apartments and homes, one of the largest and most desirable in the Emscher region, as shown in Figure 13. The dwellings are being renovated very diligently to ensure that the preservation effort is being done correctly. The remodeling process is so thorough, it is expected to take ten years to complete. Another major housing project is combining renovation and new construction in a traditional miners settlement in Gelsenkirchen. Three hundred historic buildings are being renovated and another 200 are being newly constructed on a vacant site in the settlement (see Figure 14). The design was the result of another competition.

The Emscher River

The Emscher River flows through the heart of the Emscher Region. For years, this waterway has been the major recipient of Ruhr Valley wastes, earning the reputation of being the region's "open sewer." In the future, however, this river will likely become the symbol of Emscher Park's regeneration, as major cleanup efforts are underway.

The beginnings of a polluted Emscher River and its tributaries can be traced back to the turn of the century, when the fairly new industry of coal mining continued to expand and the local population exploded accordingly. Before long, the entire 220-mile river system of the Ruhr region was extremely polluted. At the time, an organization, incorporating local officials as well as the industrial and mining companies, was created to modify the area rivers into sewage and waste disposal receptacles. This process involved straightening and grading the rivers, lining them with concrete, and enclosing them with dikes. The rivers were used as sewers instead of typical underground pipes because with so much coal mining taking place in the region, ground subsidence was a major threat. Such an occurrence would undoubtedly destroy any network of underground sewer pipes (Emscher Park IBA, 1989). Today, coal mining has virtually disappeared from the Emscher Region. As a result, subsidence is no longer a risk. This fact,

along with Emscher Park IBA's emphasis on environmental soundness, has created the impetus to clean up the area's waterways by many different means.

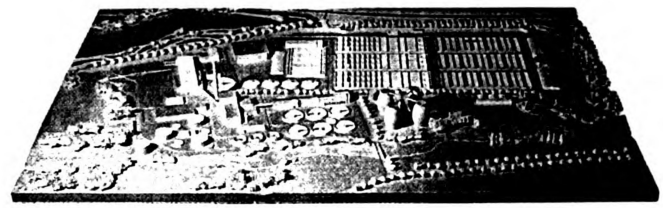
Several examples demonstrate the ecological restructuring effort of the Emscher River (Zerressen, 1993). The largest new construction project in Emscher Park IBA is a new sewage treatment plant in the city of Bottrop (see Figure 15). The plant is constructed to blend high quality architecture into the existing landscape, and its actual design was chosen through a design contest. The new plant removes the burden from a biological treatment plant further downstream, helping to improve the water quality more efficiently. This decentralized water purification system is the latest technology for cleaning the Emscher River.

A second example is a pilot project which involves separating polluted sewage from the river's clean water by diverting the sewage into underground pipes. A renewed Emscher River ecosystem has thus been possible. The natural regeneration has been evident along many stretches of the river, particularly in an area between the cities of Oberhausen and Essen. There, vegetation, clear water, and aesthetic beauty have returned to the river valley (see Figure 16).

Finally, many portions of the Emscher valley experience poor drainage resulting in minor flooding. Methods for improving drainage, from Emscher River tributaries as well as natural precipitation, are being investigated. A housing settlement in the city of Gelsenkirchen has exemplified a successful method for controlling rainwater drainage. A new system has been installed involving a series of channels throughout the settlement which collects the water and diverts it to a nearby tributary of the Emscher.

Having explored the history of the Emscher region and the massive and innovative Emscher Park IBA industrial reuse project, it is worthwhile to examine the region here in the United States where a similar past is shared, but an uncertain future remains - the anthracite region of eastern Pennsylvania. By doing so, the dire condition of the anthracite region is highlighted and the solution of an Emscher Park IBA magnitude is further justified.

Figure 15. The new sewage treatment plant in Bottrop, and its model.



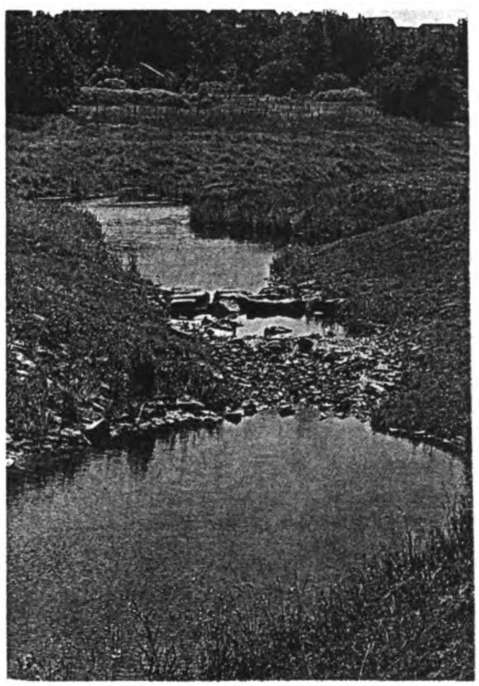


Figure 16. The beautiful regeneration of the restructured Emscher River.

The Anthracite Region of Eastern Pennsylvania: A Region in Need of an Industrial Reuse Solution

The Setting

The anthracite region is an area comprised of coal fields, located in eastern Pennsylvania. The coal deposits have formed in long ridges oriented northeast to southwest, creating an elongated- shaped area approximately 80 miles long and 30 miles wide (see Figure 17). Several primary coal-producing counties encompass the region, including Lackawanna, Luzerne, Carbon, Northumberland, Schuylkill, and Dauphin (see Figure 18). Lackawanna and Luzerne Counties, to the northeast, contain the larger cities of Scranton and Wilkes-Barre respectively. Dauphin County, to the southwest, is home to the state capital of Harrisburg. The remaining anthracite counties are primarily populated by small towns. Just to the southeast, in the Lehigh Valley, is the steel city of Bethlehem.

The Industrial History of the Anthracite Region

The Coal Fields

Anthracite is a scarce, clean-burning coal buried deep in the earth. The tumultuous Ridge and Valley region of Pennsylvania contained a copious supply of the coal, and the area's deformed geologic nature brought it closer to the surface making its extraction feasible. Utilization of the coal was not widespread until the 1830s when anthracite was used to power industry, as wood became too burdensome of a fuel. As the manufacturing of iron turned to mass production, anthracite soon became the most viable fuel for smelting (Marsh, 1987).

The arrival of railroads to the region was an important factor in the profitability of anthracite coal. Until then, no convenient method had been available for transporting coal to market. By the outbreak of the Civil War, Schuylkill County was producing half the anthracite and almost 30 percent of all coal in the U.S., and the Reading Railroad was the major carrier (Marsh, 1987). The success of railroads had great significance in the anthracite region.

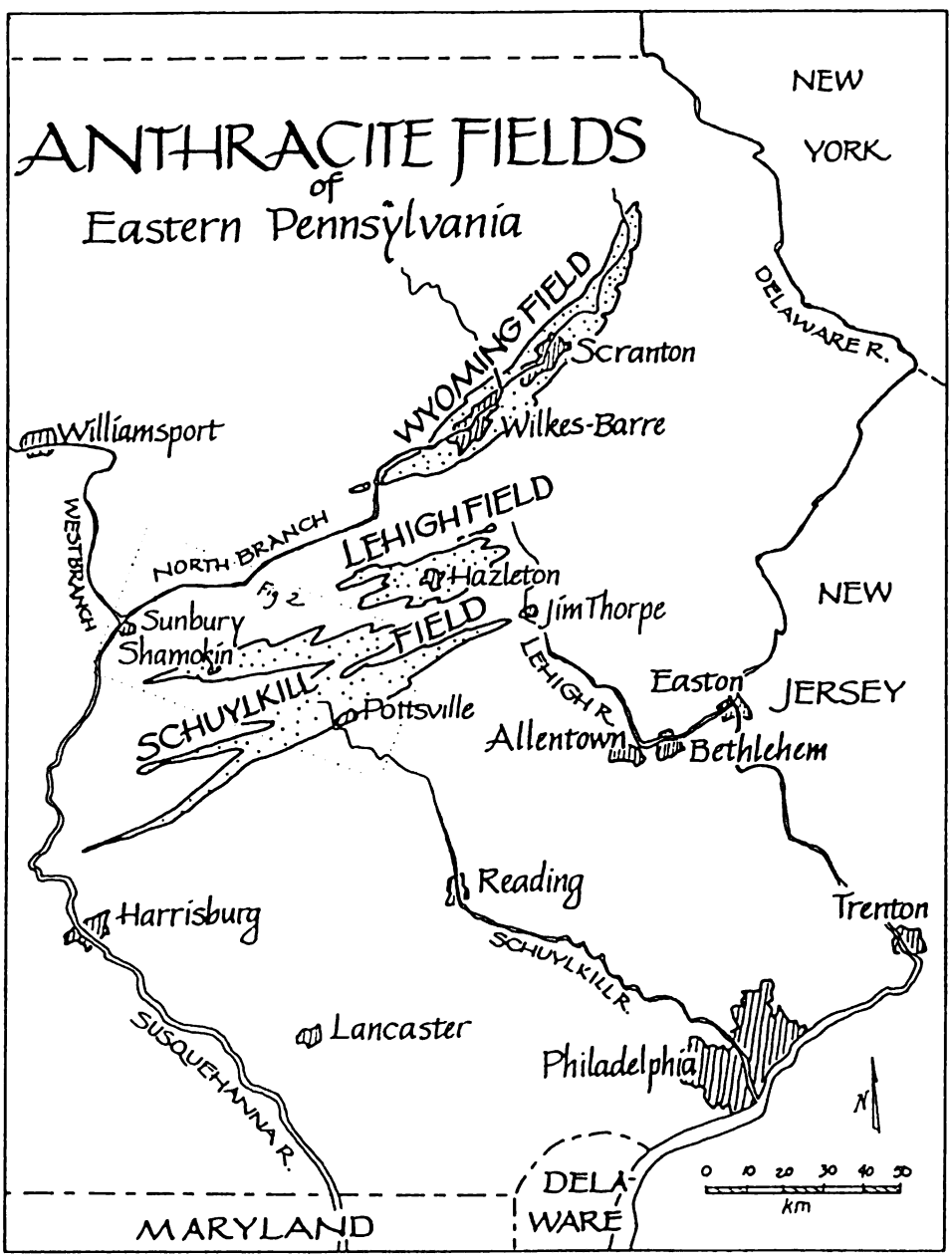


Figure 17. The anthracite region of eastern Pennsylvania.

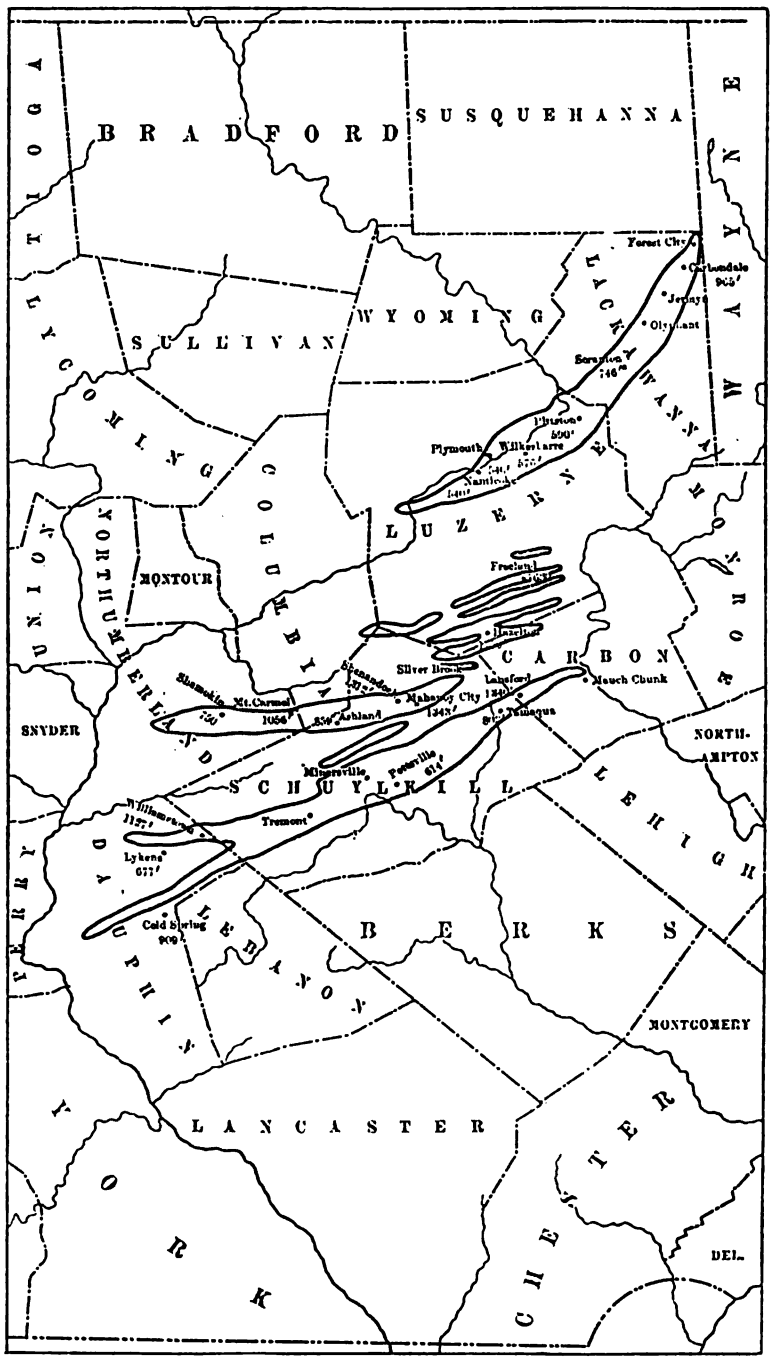


Figure 18. The anthracite region, with counties and principal cities.

Railroads became the major resource for economic prosperity because of their financial power. This was exerted through companies' control of land ownership, production, transportation, employment, and housing throughout the region.

Just as important to the economy of the anthracite region were the coal companies. Like the railroad companies, they forged a new landscape as they exploited a massive new industry. The coal company built a town around the mine - stores, streets, and houses in which the mining families lived. Often such towns faded and disappeared near small mines, but permanent towns grew at thicker coal seams (Roberts, 1904).

Another important element of the anthracite region's early history was the abundance of European immigrants who came to Pennsylvania solely to mine. The Germans tended to be the most skilled miners as well as the best mining engineers. Soon the demand for mere manpower, not necessarily skilled, caused a mass immigration in the early 1900s. As the European workers arrived, their employment destiny was quickly determined by their country of origin. A diverse culture was soon formed by the many backgrounds coalescing in the small mining towns.

The early twentieth century marked a transitional period for mining in the anthracite region of eastern Pennsylvania. The area mines, transportation networks, and towns were fully developed by 1920 and the population peaked that year. But for the coal industry, it was the beginning of the end. Although the production of coal reached a record 90 million tons in 1917 and remained at that level for another ten years, failure was imminent. The Depression abruptly disabled coal production in the early 1930s and the industry revived only briefly as the economy recovered, exceeding 50 million tons for the last time in 1948 (Roberts, 1904).

The Depression was only one reason why the coal industry began to decline. Another major factor was the competition from cheaper fuels, such as oil and bituminous coal. As the cost of labor for anthracite mining increased, the cost of transporting these other fuels decreased. The result was a disastrous surge of unemployment. Surprisingly, the population remained fairly steady, however, until World War II, when the regional population had dropped about 20 percent by 1950 (Birdsall and Florin, 1985). The war drew men to the armed forces and both men and

women to factory jobs in eastern cities. By the end of the 1950s, another 20 percent had been lured away and the decline has continued slowly in many anthracite region counties ever since.

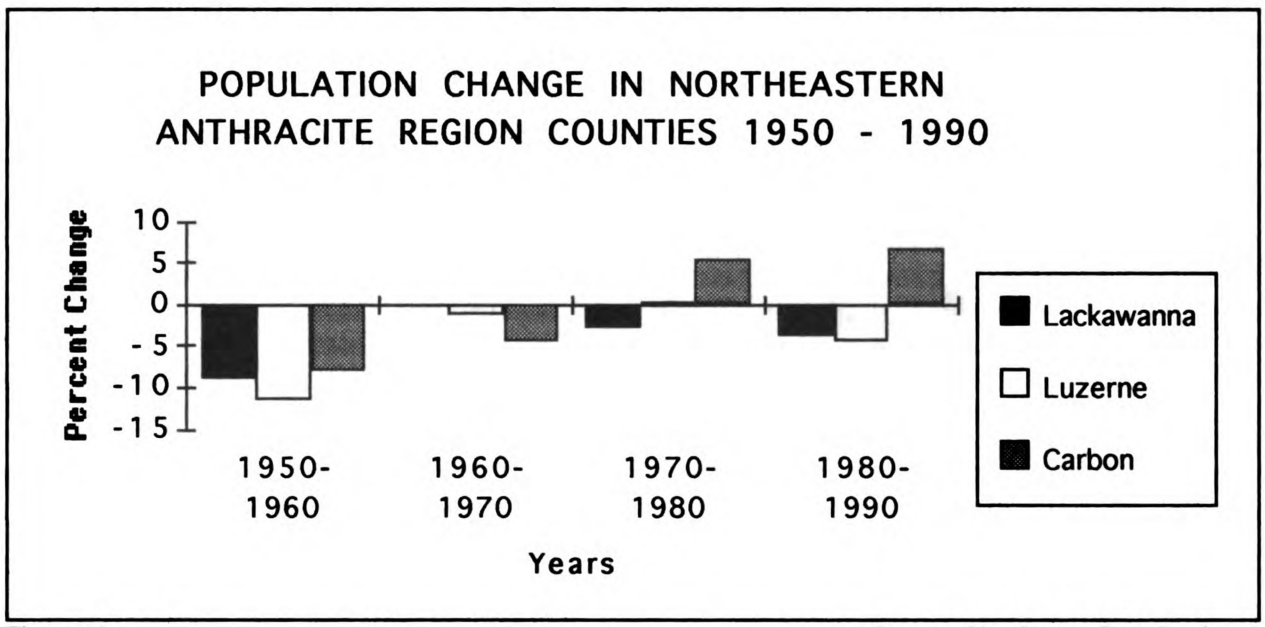


Figure 19 Source: City County Data Book

As Figure 19 shows, the northern portion of the anthracite region, including the cities of Scranton an Wilkes-Barre, have been losing population for the last four decades. The biggest loss occurred in the 1950s, when massive coal and steel layoffs were taking place. As the industries continued to slowly fade, the population losses slowed as well. Unfortunately, the economies in Lackawanna and Luzerne Counties have never been able to fully recover form the devastating loss of a major industry and their population continues to decline. Carbon County, on the other hand, is considered to be part of the growing Lehigh Valley area. After experiencing serious population loss, this county experienced a major turn around in the 1970s, as it has become a bedroom county for New York and Philadelphia commuters. This area is discussed later in the paper.

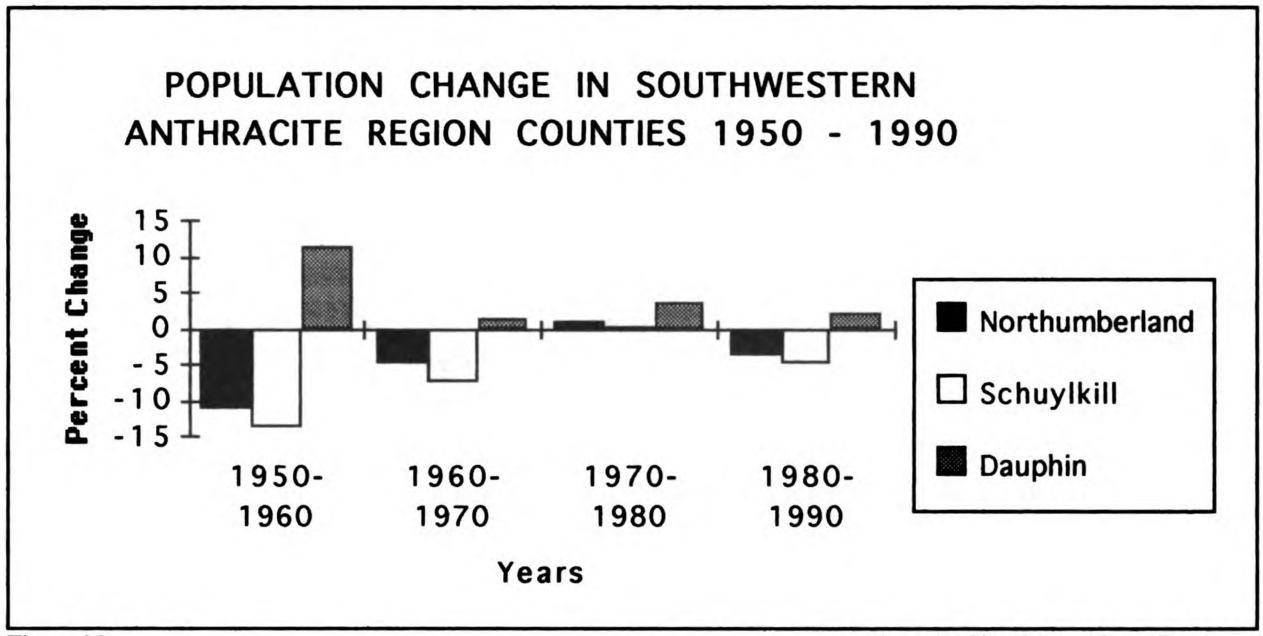


Figure 20 Source: City County Data Book

According to Figure 20, the major population decline in the southwestern part of the anthracite region took place during the 1950s as well. Dauphin County never actually experienced a decline from the mining disappearance. Since Harrisburg is located in Dauphin County, most likely state government and its related employment offset any loss in population from the declining mining industry. Northumberland and Schuylkill Counties lack a large regional center such as Harrisburg. As a result, their economies were much harder hit in terms of employment and population loss, and their populations continue to dwindle.

Figures showing employment loss due to the ailing anthracite industry provide a dramatic assessment of this sector's impact on the regional economy. Most astonishing are the huge rates of decline that have occurred each decade.

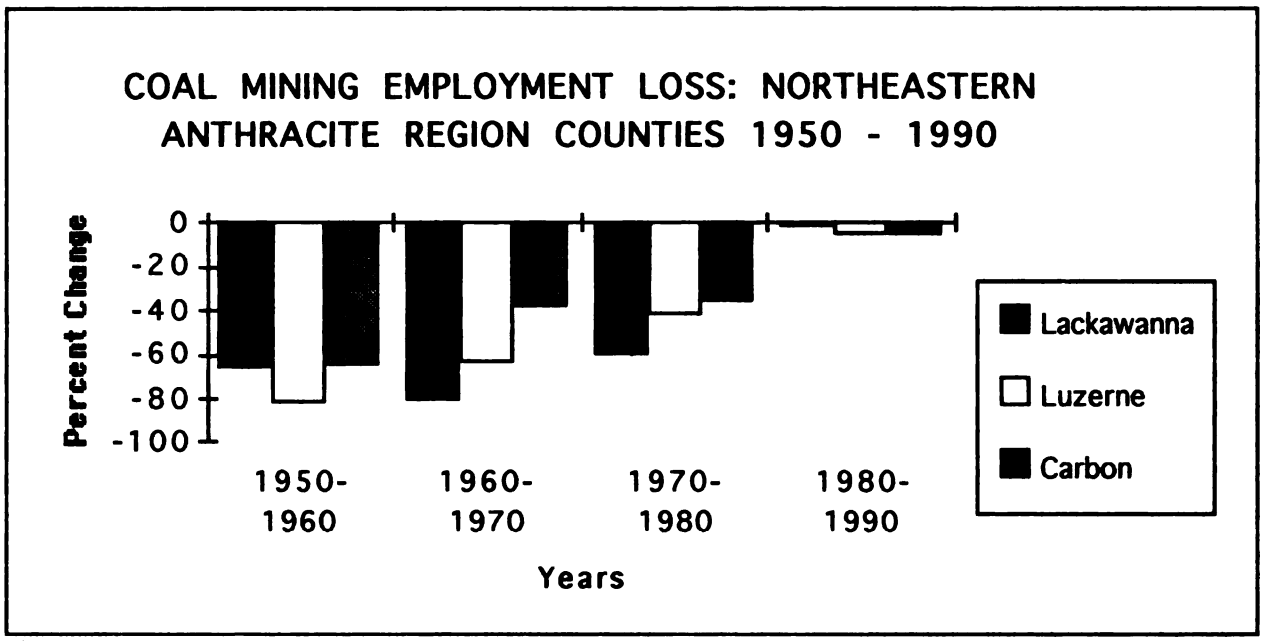


Figure 21 Source: County Business Patterns

The region was hardest hit during the 1950s and 1960s, as shown in Figure 21, when the majority of mine closings and layoffs occurred. During the 50s in Luzerne County, an amazing 80 percent of coal mining employees lost their jobs. That decade, the actual number of employees in the coal mining industry dropped from 31,597 in 1950 to 5,395 in 1960. Then in the 1960s, another 60 percent of those remaining became unemployed. Similar depressing figures are revealed for Lackawanna and Carbon Counties. By the time the 1980s arrived, there were so few employees left in the mining industry that comparatively much fewer lost their jobs. In 1990, only about 450 mining employees existed in each of the three counties. The actual coal mining employment figures for the represented counties and years can be found in Appendix A.

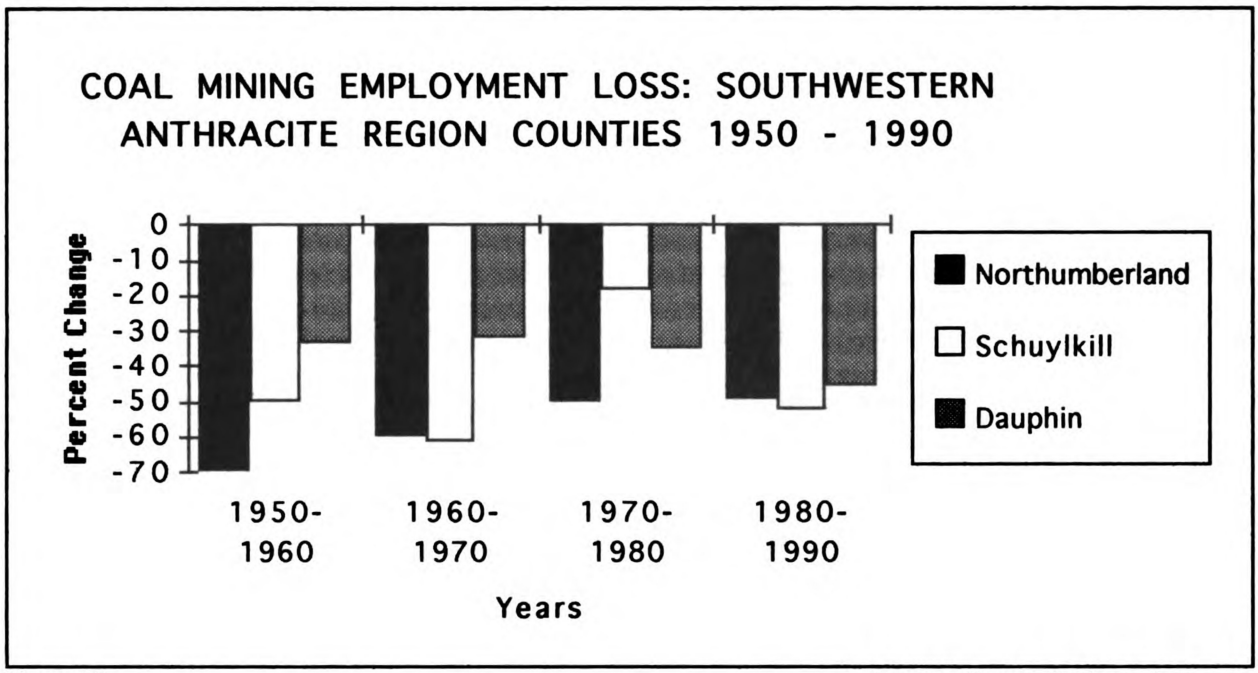


Figure 22 Source: County Business Patterns

Figure 22 exhibits a similar situation further to the southwest. Northumberland County's worst decade was the 1950s, but its condition never really improved. Schuylkill County had the most number of coal mining employees in the southwestern portion of the anthracite region. However, its 12,376 employees fell to only 920 in 40 years. Dauphin County never had nearly the coal production of the other counties in the region, but its losses are just as marked. As of 1990, only 56 people in Dauphin County remained in the industry. See Appendix A for actual employment numbers.

The Steel Town

On the southeastern of the anthracite region lies the steel city of Bethlehem. Bethlehem's industrial history practically began as soon as the first anthracite mine was bored. Steelmaking began there in 1873, with the world-renowned Bethlehem Steel Corporation creating an entire new economy for the city (Holusha, 1995). Steel produced in Bethlehem with coal from nearby anthracite mines was an important ingredient in the growth of East Coast cities, especially New York. There, such landmarks as the George Washington Bridge, Madison Square Garden, and the Metropolitan Opera House were built with Bethlehem steel.

Employment with the Bethlehem Steel Company peaked during World War II, with figures reaching 32,000. Since then, the number of employees has slowly and steadily dropped to about 2,000 with steel production permanently ceasing November 18, 1995 (New York TImes, 1995). A small crew will continue non-steelmaking operations, mainly shaping and processing steel produced in other locations. Similar to the coal industry, the decline of steel production has resulted from a lack of demand. Huge skyscrapers and bridges are simply no longer being built. In addition, small, modernized mini-mills are making it difficult for older companies to compete in a market where price is the foremost consideration.

Despite the decline of the steel industry in Bethlehem, its surrounding Northampton County has actually been growing over the last 40 years. In fact, Northampton County grew by 9.6 percent during the 1980s. At the same time, the percent unemployed in the county was a low 4.3 percent in 1990 (City County Data Book, 1994). Located in the heart of the Lehigh Valley, this county is experiencing similar growth to adjacent Carbon County. Many of the new residents are from nearby New York and Philadelphia and still work in those cities. Fortunately, this growth has successfully offset the huge employment loss of Bethlehem Steel.

The Anthracite Region Today

The towns and cities dotting the anthracite region's landscape show visible signs of a prosperity that once was. Such communities as Shamokin and Mt. Carmel are now quite poor, with downtowns almost too big and employment opportunities too limited for the current population (Marsh, 1987). Nevertheless, the main streets still support banks, department stores, and restaurants, and the uniform rows of houses in most cases are still in good condition. Although losing population as well, larger cities like Scranton and Wilkes-Barre are in a better economic position, as their size allows for a healthier diversity of business activity. However, in just about any anthracite region community, the pride that was generated through several decades of hard work and hard times indeed remains with the people.

Between the municipalities lie the untouched remains of a coal industry that shaped the region. Just outside of Shamokin, the world's largest pile of anthracite mine waste sits proudly, barely covered by a few struggling birch trees. The incline which once hauled the waste out of the earth still rusts in its place. Yet the unreclaimed strip mines that surround the valleys once thriving with activity are by no means unique, nor are the slag mounds and brushy fields that give the entire anthracite region an almost lunar quality.

Water pollution remains a serious problem throughout eastern Pennsylvania as a result of many years of coal extraction. The groundwater in many cases has leached out iron and sulfate from the old shafts and tunnels. Water in the valleys is often more acidic than vinegar and it pollutes such major rivers of eastern Pennsylvania as the Lehigh, Schuylkill, and Susquehanna (Marsh, 1987). As a result, municipal water must come from various dams on the ridges surrounding the valleys.

In Bethlehem, a similar grim outlook exists along the Lehigh River. There, a huge steel factory occupying 160 acres downtown lies practically idle (Flanagan, 1995). The economically thriving Lehigh Valley region that surrounds the plant lends no comfort to its fate. As former Bethlehem Steel workers begin to search for new employment, the community must begin to search for new industrial reuse solutions.

The Situation Has Continued...

For decades, strict Pennsylvania environmental policies have been disincentives for the cleanup of old industrial sites in the eastern Pennsylvania anthracite region. The policies have traditionally handed cleanup responsibilities to new buyers of industrial sites, thereby discouraging private firms, banks, and public redevelopment authorities from getting involved with industrial reuse (American Bar Association, 1996). Their concern has been the exorbitant costs and efforts associated with the cleanup process.

The result of the policy fears has been industrial site avoidance and a general lack of interest in redeveloping the depressed anthracite region. At the same time, all positive aspects of

the area's industrial sites, such as the availability of solid infrastructure, have been negated by the threat of liability. As a result, the modern innovative potential of the anthracite region, as seen in the Emscher area, has been extremely difficult to fulfill.

An unfortunate relationship indeed exists between industrial sites and their potential for redevelopment. While environmental and economic development regulations hinder the cleanup and reuse of such sites, they usually offer perfect opportunities for economic development. Such is the case in eastern Pennsylvania, where site after abandoned industrial site awaits innovative reuse and redevelopment techniques that would economically benefit the entire region.

The Emscher Park Solution for the Anthracite Region: Indicators of a Successful Application

By now, it is apparent that the Emscher Park IBA is a very successful industrial reuse concept for the Emscher region, and that the anthracite region needs a similar solution. But what factors are present in eastern Pennsylvania that indicate such a solution could work there?

Regional Advantages

Anthracite was naturally formed in the ridges of eastern Pennsylvania thousands of years ago. As the mining of this natural resource flourished along with the steel industry, an entire region continued to grow in its vicinity. However related or unrelated to these industries, the anthracite region has several key regional advantages that make it a favorable as well as feasible location for the Emscher Park IBA concept to be successfully applied.

Proximity to Population

A key element to the success of the Emscher Park IBA is its proximity to millions of people. Although the anthracite region of eastern Pennsylvania is not nearly as populated as the Emscher region, the primary coal and steel counties contain a combined population of almost one million people. More importantly, New York and Philadelphia are within two hours and their metropolitan areas have crept even closer. Thus, an additional twenty million people are within easy reach of eastern Pennsylvania.

A large population is crucial for many reasons, human resources perhaps being the most important. A project like the Emscher Park IBA in the anthracite region would require scores of planners, architects, engineers, and designers. Such professionals are much more prevalent in large cities, where most companies of the like exist. New York and Philadelphia are no exception, supporting many headquarters as well as branch offices of most major firms such as Goodkind & O'Day, Parsons Brinckerhoff, and Wallace Roberts & Todd.

Another advantage of the anthracite region being near a very large population is the abundance of large financial institutions and corporations. Major banks would be necessary to help finance a large public-private partnership like the Emscher Park IBA in the anthracite region. Institutions such as Chase Manhattan and Chemical Bank have been major lenders for decades and their proximity and reputation are key elements for a successful major industrial reuse project. In addition to banks are a large number of Fortune 500 company headquarters located in Philadelphia and New York. Such corporations could potentially be major investors in the revitalization efforts that would take place in eastern Pennsylvania.

A Growing MSA Nearby

Of all Metropolitan Statistical Areas (MSA) in Pennsylvania, the Allentown-Bethlehem-Easton MSA is growing the fastest. Better known as the Lehigh Valley, this region is home to the Bethlehem Steel plant and is immediately adjacent to the anthracite region. Carbon County is actually included in the MSA. In the period between 1986 and 1993, the Lehigh Valley's population grew 6.6 percent, compared to only a 1.8 percent growth in the Philadelphia MSA and a loss of 2.4 percent in the Pittsburgh MSA during the same period (Rand McNally, 1993). At the north end of the anthracite region, the Scranton-Wilkes-Barre-Hazleton MSA also experienced a loss, of 0.1 percent, in the same seven year period.

Much of the growth in the Lehigh Valley can be attributed to the completion of Interstate 78, which has cut travel time from the region to New York down to an hour and a half. The heavily concentrated office stock of New Jersey's outer Edge Cities are less than one hour away. As a result, many people working in those areas consider the commute manageable and have moved to the Lehigh Valley to avoid higher taxes and congestion.

The growing population is a positive thrust for industrial revitalization hopes in both the Lehigh Valley and the anthracite areas. New people from the larger cities will bring new ideas and disposable incomes that the area didn't always have. Also, more permanent residents arriving in the area means more people will be available to possibly work on the redevelopment

project, to work for new companies starting or relocating at some of the reused sites, or at least to visit the attractions regularly. It would certainly be difficult to solicit funding, ideas, and enthusiasm from a region that was completely declining in population.

With area growth occurring predominantly in the southern portion of the anthracite region, plans for an Emscher Park-type industrial redevelopment project should incorporate these growth patterns. Perhaps it would be best to target a first phase of redevelopment to this southern portion where the population is growing, such as in Bethlehem, surrounding Northampton County, and Carbon County. Therefore, housing, office, and employment options could be incorporated into the industrial reuse concept, concentrating especially where the people are now. As the project hopefully catches on, the reuse efforts could be diffused northward into the heart of the anthracite region, thereby improving the area's economy in gradual increments.

Proximity to Recreation

The anthracite region is located in the heart of a recreational paradise. Year after year, thousands of people visit the region for its variety of recreational amenities. A major part of the Emscher Park IBA is the Landscape Park in which leisure and recreation are tied into the reuse plan. With so many amenities nearby, an industrial reuse project in the anthracite region should incorporate a similar recreational plan into its overall concept, whereby a network of green corridors could connect the already popular destinations to newly created attractions offered at reuse sites.

The same geologic folds that have produced the highest quality coal have created a series of mountains, namely the Poconos. Interspersed are picturesque mountain lakes and rivers. For decades, the Pocono Mountains have been a major vacation destination primarily for residents of New York and Philadelphia, offering several world-famous resorts such as the Mount Airy Lodge. Their proximity to the heavily mined areas creates an exciting opportunity to incorporate the resort atmosphere into an industrial reuse plan.

With rugged terrain and a cold climate, the anthracite region is the perfect setting for skiing. Several ski resorts in the area have taken advantage of these conditions (Rand McNally, 1996). The northern portion of the anthracite region contains Montage Ski Area near Scranton, while the central area hosts Jack Frost Mountain, Big Boulder, Shawnee Mountain, and Camelback. To the south near Bethlehem is Blue Mountain Ski Area. Skiing would be another favorable amenity to add to an industrial landscape park in the anthracite region.

A significant natural wonder unique to the area is the Delaware Water Gap, located just to the east of the anthracite region. The Water Gap was formed by the Delaware River cutting a canyon through the mountains, and serves as the border between New Jersey and Pennsylvania. The Delaware Water Gap National Recreation Area allows tourists, campers, and hikers to take advantage of the natural beauty of the region. The Appalachian Trail traverses the anthracite region, crossing the Delaware River at the Water Gap. This makes the region a popular layover for long-distance hikers and campers as well. Perhaps the Appalachian Trail could be the key central green corridor from which a regional network is radiated to all industrial and recreational offerings of an industrial landscape park.

Major Educational Institutions Nearby

A crucial element of an industrial reuse project such as the Emscher Park IBA is the availability of university support. Universities provide invaluable funding, academic expertise, research, and outreach services for their communities. Advice on everything from design, planning, and environmental considerations to financial possibilities for a large-scale redevelopment project could be attained from local universities. In addition, student input could be solicited through classes and internships. Such assistance would be a necessary part of a major industrial reuse undertaking in the anthracite region in order to get a broad perspective on all types of solutions.

The coal and steel region is fortunate to have several large and small universities within, as well as surrounding, the area. Scranton is home to the University of Scranton and a Penn State

University campus. Wilkes University is located in Wilkes-Barre. To the east is East Stroudsburg University in East Stroudsburg (Rand McNally, 1996). Lehigh University, known for its engineering program, is in Bethlehem. Just outside the region are such major universities as Penn State University's main campus, the University of Pennsylvania, and the State University of New York at Binghamton.

Good Transportation Network

Despite its rugged nature, the anthracite region is located in the heart of an excellent highway system. This is important for a massive industrial reuse project such as the Emscher Park IBA because people, equipment, and supplies must be able to access the coal and steel sites in order for revitalization to occur. The transportation network would also provide easy access to the sites upon completion to ensure maximum utilization of any type of reuse project, whether it be new offices, homes, or recreational facilities.

The major north-south artery through the anthracite region is Interstate 81, which travels through Scranton and Wilkes-Barre and forms a general western boundary of the area. The region is bounded on the east by Interstate 380, which begins at Scranton and travels south, where State Route 33 continues south to Easton to complete the eastern boundary. Interstate 78 runs east-west, creating a southern boundary of the anthracite region, and directly links the area to New York and its environs. Interstate 80 crosses the heart of the region in an east-west fashion, and provides another direct link to New York. Finally, the Pennsylvania Turnpike Northeast Extension begins at Scranton and travels south through the region, providing access to the Lehigh Valley, and continues to Philadelphia. In between the network of expressways are several major state and U.S. routes which facilitate access to all points throughout the area.

Making Environmental Progress

The Land Recycling Program

Recently, the Commonwealth of Pennsylvania has initiated a new program called the Land Recycling Program. The intention is to encourage, instead of discourage, the redevelopment of old industrial sites. It sets standards, by law for the first time, that are protective of human health and the environment, but which consider future use as well (American Bar Association, 1996). The program provides any potential purchaser of an industrial site with clear cleanup standards, and ensures that liability is relieved upon achievement of the standards. The result should be increased possibilities for redeveloping industrial sites in eastern Pennsylvania, particularly projects resembling those of the Emscher Park IBA.

The specific benefits of Pennsylvania's new Land Recycling Program are numerous. It encourages private-sector cleanup, and therefore the productive use of vacant industrial sites. The program also stimulates economic growth through the facilitated availability of developable sites for any type of use. Through the Land Recycling Program, partnerships with local governments and businesses are encouraged, thus paving the way for future redevelopment cooperation. Perhaps most importantly, the reuse of an industrial site, as encouraged by the Land Recycling Program, prevents new construction from taking place in an undeveloped area. Thus, the pressure to develop farmland, open spaces, and forests is greatly reduced and once-derelict sites are offered a new beginning.

The Environmental Acts

The Land Recycling Program involves three new bills known as Acts 2, 3, and 4, signed into law by Pennsylvania Governor Tom Ridge on May 19, 1995 (American Bar Association, 1996). All three pieces of legislation would undoubtedly improve the likelihood of a redevelopment plan for the anthracite region being realized.

Act 2 is the Land Recycling and Environmental Remediation Standards Act, which is the primary law establishing the Land Recycling Program. The act creates a realistic framework for setting cleanup standards, provides incentives for redeveloping derelict sites, frees responsible parties from liability once cleanup standards have been satisfied, sets remediation deadlines, and provides funding for environmental studies and cleanups.

Act 3 is the Economic Development Agency, Fiduciary, and Lender Environmental Liability Protection Act. Fiduciaries are those acting as a trustee, executor, or administrator for another person. Act 3 extends the liability protection of Act 2 to such involved parties, as well as banks and other agencies. Thus, the act further limits the environmental liability of those involved with redeveloping an industrial site and helps to prevent cleanup discouragement and concern.

Finally, Act 4 is the Industrial Sites Environmental Assessment Act. Through the Pennsylvania Department of Commerce, the act provides up to $2 million for environmental evaluations and cleanups in various communities across the state, which the Department has designated as environmentally distressed. The funding is provided through grants from the Department of Commerce to municipalities, local authorities, non-profit economic development agencies, or any other related agency.

The Ball is Rolling

In addition to favorable new environmental legislation, a new interest in the future of the anthracite and steel region is beginning to emerge. From corporations to individuals, the economic and physical potential of this area is finally being realized.

The Earth Conservancy

The Earth Conservancy (EC) is a non-profit organization which recently acquired 17,000 acres of former coal mining land in the anthracite region, just outside of Wilkes-Barre. The EC was formed to attain coal mining lands for future economic reuse. The EC has initiated a multi-

year community-based study to develop an integrated planning solution that combines environmental protection with economic development to best prepare the land holdings for an increasingly competitive marketplace. Included are over 100 parcels in 20 jurisdictions ranging in size from a few acres to several thousand acres.

Several important planning issues must be addressed in considering options for the EC land holdings. They include creating access to the reused sites and parcels from the existing road network; the reclamation of mined land; the appropriate development of parcels that are physically isolated from surrounding communities or other reused parcels; the development of parcels immediately adjacent to urban areas; and the development of recreational features, including the potential of developing a regional green space network. Thus, it appears that serious initiative has been taken to begin addressing the reuse situation in the anthracite region.

Ideas for Bethlehem

Encouraging news has also developed in Bethlehem, where ideas are being proposed and plans are being considered for the reuse of Bethlehem Steel Corporation's once profitable factory (Flanagan, 1995). As the city solicits input, many opinions of the factory's reuse potential prevail. As former steelworkers would like to see no other use than steel production for the plant, many local citizens are trying to create realistic solutions. Some community leaders would like to see an industrial park replace the factory, but others feel that such a reuse option would not do justice to the city's industrial history.

The biggest challenge facing the Bethlehem Steel plant is the amount of imagination and open-mindedness its reuse would require. According to design experts, imagination of this magnitude is what draws a community together. Unfortunately, however, it also causes a great deal of fear and skepticism for the average American. Even the dean of the architecture school at the University of Virginia was full of pessimism concerning Bethlehem's potential by declaring the city's death imminent (Flanagan, 1995).

While the cynicism continues for some, others have put their creative powers to use. Such considerations have included urban agriculture projects like tree farms, botanical gardens, and greenhouses to highlight a shift from the industrial revolution to the green revolution; and more typical urban environments such as a dense continuation of the downtown with blocks and streets. Bethlehemites have had some ideas of their own. Certain residents would like to see the factory site developed into everything from a supermarket, hockey rink, and ball fields to a more expansive Central Park-like setting.

As diverse as the input may be, all contributors agree on one thing: bottom-up community participation. Despite a few enthusiasts, Bethlehem has had a traditional lack of civic involvement with little community vision. Participation, however, is perhaps what has made the Emscher Park IBA project so successful and widely approved. With industrial reuse interest and initiative indeed present, Bethlehem's first task is to break tradition and enlist as much public support as possible to create a new beginning for the city's greatest landmark.

Emscher Park Ingredients for Success

There are many keys to a successful industrial reuse project in the anthracite region, as demonstrated by the Emscher Park IBA industrial redevelopment concept. Such keys can also become hindrances. In order to use Emscher Park IBA as a model for industrial reuse, the same fundamentals must be followed. The concept has certainly proven its success in the Emscher region. If the major Emscher Park features are borrowed and its appropriate lessons have been learned, a similar endeavor in the anthracite region is likely to succeed.

The Building Exhibition Concept

The building exhibition concept has been around for over 150 years. The purpose has always been to bring many people together in one location to present , exhibit, and share new ideas. The Emscher Park International Building Exhibition does just that, introducing new planning and design concepts from professionals who care about the future of Germany's heaviest industrial area. As a result, the highest quality designs and ideas in the world have been presented through this joint effort, ensuring that Emscher Park will receive the best possible solutions for its reuse needs.

In order to achieve the design and planning results experienced with the Emscher Park IBA, the anthracite region should announce a building exhibition to take place there. Designers, planners, and architects from around the world could be invited, especially those who worked on Emscher Park projects, to present innovative industrial reuse ideas especially for the needs of the anthracite region. The publicity would help draw attention to the area and the cause of revitalization, thereby encouraging assistance of all types. As the Emscher Park IBA has proven, such a program ensures the best results.

Organization

The Emscher Park IBA concept was initiated by the state government of Northrhine-Westphalia out of the need to provide a solution for its most economically and environmentally devastated region. Accordingly, the state created a private company, the Emscher Park Planning Company, Ltd., to take responsibility for the project. The company coordinates design competitions for reuse ideas and assists in implementing the results. Also the planning company acts as a consultant throughout the planning process. Another organizational element is the Building Exhibition Steering Committee, which helps to decide which projects are to be undertaken. Led by the state Secretary of Transportation and Urban Development, this committee works closely with other state government representatives, as well as involved municipalities, unions, industries, agencies, and planning and architecture associations.

The Commonwealth of Pennsylvania indeed recognizes a similar problematic economic and environmental situation in its anthracite region. For such a large-scale reuse project to begin, the state must take serious initiative to create an organizational structure like the one created for the Emscher Park IBA. This would involve the creation of a company to oversee the project from beginning to end, perhaps headquartered in Wilkes-Barre for its geographic centrality. The company could create design competitions and solicit reuse ideas from planners and architects. In addition, a similar steering committee could be formed to coordinate representatives from the anthracite cities and towns, the coal and steel industries, unions, environmental groups, and planners.

Financing

Funding a massive industrial reuse project is a major consideration. The Emscher Park IBA project has been financed through a public-private partnership. The state of Northrhine-Westphalia has created special budgets for various public programs across the state. Each of the Emscher Park project categories, such as housing and business development, falls under a state

Conclusion

The Emscher Park International Business Exhibition has taught numerous valuable lessons about the possibilities of industrial reuse. By simply examining the various Emscher Park projects that have been completed, much can be learned about its trend-setting innovation. While demonstrating that the Emscher Park IBA has been so successful in regenerating the Emscher region of Germany, and that eastern Pennsylvania is ready for a similar solution, the attempt has been to emphasize that such a reuse concept can indeed revitalize the anthracite region.

With this conclusion in mind, an important final lesson is revealed. Problems that plague American society are not always unique to this country. Quite often, someplace else in the world has experienced the same occurrence. As a result, much can be learned from the wisdom of our international colleagues. They reveal that the best solutions to serious issues are not always close to home. As the Emscher Park IBA has proven, such is the case with industrial reuse planning.

program and receives financing through its respective budget. The private funding sources have been from large corporations, Emscher Park companies, and individuals.

Public-private partnerships have become a popular tool for financing major projects in the United States. Pennsylvania would most likely have to be responsible for the majority of the public funding for an industrial reuse project in the anthracite region, perhaps with monies slated for environmental cleanup and economic development projects. For such a large undertaking, federal funds would likely be available as well. However, the majority of financing would have to come from private sources. Enough interest and commitment for the project would have to be generated to solicit funding from any local or national corporation. Based on the Emscher Park IBA success, potential investors could be undoubltedly convinced that such a project would be successful in the anthracite region. In any event, the public-private partnership is the only feasible financing solution.

Community Input

One of the most important aspects of a large-scale planning effort is involving as many community members as possible. The Emscher Park IBA is very successful in procuring public involvement, especially in such forms as participation, employment opportunities, and cultural offerings. Public participation has involved residents or employees in Emscher Park providing suggestions in the planning stages for individual projects that affect them. The redevelopment work has provided an employment opportunity for those without a job, giving them new skills for a changing market. The Emscher Park IBA has also placed a great deal of emphasis on the cultural importance of the region, thus encouraging the incorporation of local artistic talent into the planning process.

A successful reuse project in the anthracite region would require the same commitment to community involvement. If potential residents, workers, and visitors of a reused industrial area are able to express their wants and needs concerning redevelopment, the final product will ultimately be more successful. A reuse project must also involve the hiring of local unemployed

residents. As in the Emscher region, eastern Pennsylvania has lost thousands of coal and steel related jobs. An able and willing workforce exists to help rebuild an area of which they are very proud.

Types of Projects

The Emscher Park IBA is a huge undertaking involving several types of projects. Its success is due largely to an appropriate and encompassing blend of reuse projects. The categories include the preservation of industrial heritage sites, the protection and reclamation of open spaces, the redevelopment of industrial land into business space, the construction and redevelopment of housing, and the environmental cleanup of the Emscher River. Such a variety is necessary for fulfilling the basic needs of an economically and environmentally distressed area.

The anthracite region is an area in need of the same improvements as the Emscher region. The categories of reuse projects implemented in the Emscher Park IBA are completely appropriate for eastern Pennsylvania to remediate many of its economic and environmental problems. Therefore, a similar reuse agenda should be employed. Industrial structures should be preserved and reused for historical identity, especially since anthracite coal is uncommon. Open spaces throughout the region should be reclaimed and connected with the many existing recreational opportunities. The industrial structures should be redeveloped into office parks to provide an attractive setting for new businesses. Other structures and fallow industrial land should be redeveloped, as well as a prevalent deteriorating housing stock, to provide an appropriate amount of new housing for expected growth. Finally, the region's contaminated rivers, such as the Lehigh and Schuylkill, should be cleaned and returned to a natural state. As difficult as these efforts may seem, they have been done before through the Emscher Park IBA.

Bibliography

American Bar Association. 1996. "Brownfields Redevelopment: Cleaning Up the Urban Environment." pp. 367-369.

Birdsall, Stephen S., and John W. Florin.1985. *Regional Landscapes of the United States and Canada*. New York: John Wiley & Sons.

Collaton, Elizabeth, and Charles Bartsch. 1996. "Coming Clean for Economic Development." *Northeast-Midwest Economic Review*. January: pp. 9-13.

Davies, Edward J. 1985. *The Anthracite Aristocracy*. DeKalb, IL: Northern Illinois University Press.

Emscher Park IBA. 1989. *Memorandum on Content and Organization*. Gelsenkirchen, Germany: Emscher Park GmbH.

Flanagan, Barbara. "Bethlehem Searches for a New Heart." New York Times, 21 December 1995, v145, p. C1.

Holusha, John. "Farewell to a Mill That Shaped the Modern City." New York Times, 21 October 1995, v145, p. 35.

Kiedrowski, Rainer, and Ekkehard Bodenstein. 1994. *Ruhrgebiet*. Hamm, Germany: WAS Media Productions.

Kilborn, Peter. "A City Prepares for Life After Steel." New York Times, 6 December 1994, v144, p. A12.

Marsh, Ben. 1987. "Continuity and Decline in the Anthracite Towns of Pennsylvania." *Annals of the Association of American Geographers*, 77(3), pp. 337-352.

Roberts, Peter. 1904. *Anthracite Coal Communities*. New York: The Macmillan Company.

Salay, David L., ed. 1984. *Hard Coal, Hard Times*. Scranton, PA: The Anthracite Museum Press.

Savageau, David, and Richard Boyer. 1993. *Places Rated Almanac*. New York: Prentice Hall.

U.S. Department of Commerce. Bureau of the Census. 1962. *City County Data Book*. Washington, DC: U.S. Government Printing Office.

----. 1977. *City County Data Book*.. Washington, DC: U.S. Government Printing Office.

----. 1988. *City County Data Book*.. Washington, DC: U.S. Government Printing Office.

----. 1994. *City County Data Book*.. Washington, DC: U.S. Government Printing Office.

U.S. Department of Commerce. Bureau of the Census. 1950. *County Business Patterns*. Pennsylvania. Washington, DC: U.S. Government Printing Office.

----. 1960. *County Business Patterns*. Pennsylvania. Washington, DC: U.S. Government Printing Office.

----. 1970. *County Business Patterns*. Pennsylvania. Washington, DC: U.S. Government Printing Office.

----. 1980. *County Business Patterns*. Pennsylvania. Washington, DC: U.S. Government Printing Office.

----. 1990. *County Business Patterns*. Pennsylvania. Washington, DC: U.S. Government Printing Office.

Zerressen, Marion, ed. 1993. *The Emscher Park International Building Exhibition.* Gelsenkirchen, Germany: Emscher Park GmbH.

Zerressen, Marion, ed. 1996. *The Emscher Park International Building Exhibition.* Gelsenkirchen, Germany: Emscher Park GmbH.

APPENDIX

COAL MINING EMPLOYMENT: NORTHEASTERN ANTHRACITE REGION 1950 - 1990

Counties	1950	1960	1970	1980	1990
Lackawanna	14,302	4,733	903	356	436
Luzerne	31,597	5,395	1,915	1,110	465
Carbon	6,827	2,394	1,480	950	400

COAL MINING EMPLOYMENT: SOUTHWESTERN ANTHRACITE REGION 1950 - 1990

Counties	1950	1960	1970	1980	1990
Northumberland	4,644	1,408	560	280	142
Schuylkill	12,376	6,194	2,386	1,938	920
Dauphin	359	238	161	104	56