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Book Chapter

Green and sustainable Øresund region: Eco-branding Copenhagen and Malmö

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Green Sustainable Øresund Region

ECO-BRANDING COPENHAGEN AND MALMÖ

A positive image of a city or region attracts people, investors, and enterprises. High-quality environment and local sustainability initiatives can be used for creating a positive image. A growing number of regions and cities around the world have in recent years attempted to exploit this opportunity through sustainable development strategies and innovative environmental initiatives combined with green image marketing. The Øresund region in southern Scandinavia is an example of an area that has gone to great effort to brand itself as green and sustainable. One of the central visions for the region when the Øresund cooperation was launched in 1994—after the decision to build a bridge across the sound (Øresund) connecting Denmark and Sweden—was to become "one of the cleanest big city regions in Europe."[1] This goal was representative of the new environmental policy agenda that had emerged in the early 1990s. Environmental efforts came to be considered important not only for the sake of health, quality of life, and sustainability, but also for stimulating growth and enhancing attractiveness of the region. Stimulating environmentally sustainable development signals that this is an advanced region and encourages environmental innovations and export of related products and services. Particularly the major cities Copenhagen and Malmö have developed sustainability profiles and eco-branding strategies. They are often mentioned, particularly in European contexts, as eco-city forerunners and achieve high rankings in international comparisons.

In this chapter we discuss the recent development of the region and analyze the relation between environmental quality in the region and policy programs to undergird the image of Øresund, Copenhagen, and Malmö as green environmental forerunners of urban sustainability. Have the latter had marked impact on the environment? Or has eco-branding primarily capitalized on previous environmental improvement—much of which was exogenously driven? Is this a place where sustainable living is in the becoming? Our aim is not to provide exhaustive answers to these

Figure 1. Map of the Øresund region.

questions, but more modestly to present an analysis supporting the relevance of these questions while indicating conclusions that more thorough analyses may reach.

The Øresund Region

Copenhagen is the capital of Denmark (540,000 inhabitants, with 1.7 million inhabitants in the capital region), while Malmö is the third largest city in Sweden (303,000 inhabitants, with 663,000 in the greater metropolitan area). Together with their surrounding regions (Zealand in Denmark and Scania in Sweden), they form the transboundary Øresund region with 3.7 million inhabitants in an area of 7,988 square miles (20,689 square kilometers)—the largest and most densely populated urban region in Scandinavia. Other cities in the region include Helsingborg (124,000, center of Northwestern Scania), Lund (103,000), and Kristianstad (77,000, center of Northeastern Scania) in Sweden, and Roskilde (81,000) and Elsinore (Helsingør, 61,000) in Denmark.

The Øresund region accounts for 26 percent of Denmark's and Sweden's combined GNP, with an employed labor force of about 1.7 million (1.2 million on the Danish side, 500,000 on the Swedish side).[2] The region is home of twelve universities, organizationally connected through Øresund

PHOTOGRAPH BY JAN KOFOD WINTHER

Figure 2. Øresund Bridge, view from Denmark toward Sweden. Artificial Pepper Island in foreground, where bridge and tunnel meet. The southern tip of Salt Island is on the left, with Malmö in the background.

University, with some 150,000 students, 6,500 PhD candidates and 12,000 researchers.[3] Both sides of the Øresund region are rich in agricultural land. About half of Denmark's and Sweden's combined employment in pharmaceutical industries and in medical technological industries is located in the region, which also includes strong clusters of firms within life science, IT, design, logistics, food industries, and environmental technology.

Copenhagen is in many ways the primary city in Scandinavia. Compared to Malmö and Scania, Greater Copenhagen has a much larger and more diversified labor market, especially in state and business administration, banking and finance, consultancy, culture and tourism, and has in recent years become an important labor market for the population of Scania. Crossing the Øresund was greatly facilitated by the opening of the bridge in 2000. In 2007 some 25 million trips were made across the sound via the bridge (nearly 10 million of which were by train), about twice as many trips as in 2001.[4]

The Breakthrough of Sustainability Goals

It was not surprising that sustainability became a central part of the Øresund cooperation from the start. Both Denmark and Sweden endeavor to be perceived internationally as leaders of environmental policy and management. During the 1980s, environmental politics had reached its second

and definite breakthrough in Western Europe. While the first wave, the "environmental awakening" in the 1960s, was characterized by discovery and debate on local environmental problems, the emphasis during the 1980s was on large-scale international issues. Dying forests in Central Europe, the discovery of the ozone hole and mass death among fish and seals in the Baltic Sea made large-scale threats concrete, and these threats were perceived as urgent.[5] International cooperation intensified in the early 1990s with the Earth Summit in Rio de Janeiro, and environmental issues became in many countries a much more important policy area.

In both Sweden and Denmark, environmental policies were radicalized during the 1990s.[6] Ambitious water plans and programs for radical reduction of greenhouse gas emissions were introduced in Denmark, and the Ecocycle and Green People's Home programs were launched in Sweden.[7] The Ecocycle vision was a national vision for sustainable Swedish society based on closing cycles and minimizing road transport while improving public transport coverage and regional economic growth potentials. The Green People's Home policy incorporated the goal of sustainable development into the traditional social democratic People's Home program. The most concrete result was the Local Investment Program, which supported innovative sustainability efforts in Swedish municipalities.[8] Local Agenda 21 was actively supported by governments in both countries.

Ecological Modernization, Ecocities and Place Branding

The *Environmental Program for the Øresund Region* states the following:

> A good environment is a goal in itself. In the Øresund region it is, however, more than that—it is also one of the most important preconditions for a positive and dynamic development. With this environmental program it is our intention not only to take a first step toward breaking the relation between wealth and negative environmental impact, but to establish that a good environment is a prerequisite for desirable development in the Øresund region.[9]

This program evidently assumes that it is possible to combine sustainability with economic growth, and that active environmental initiatives can contribute to growth. In this it adheres to a perspective that has gained considerable influence in environmental politics: ecological modernization.[10] Ecological modernization optimistically emphasizes potentials for combining environmental and economic goals by identifying and exploiting win-win situations. Links are thereby forged between environmental policy and regional development programs. Programs of environmental innovation, local sustainability investment, development of alternative energy sources, and green industry initiatives are seen not only to improve environmental performance, but also to stimulate regional economic competitiveness and growth by making regions more attractive to tourists (which account for increasing shares of urban economies), investors, and the creative class (commonly perceived as a key factor in urban development).[11]

These visions provide market actors a central role in developing society in an ecologically sustainable direction. Environmental consciousness is important not only for influencing legislation, but also for stimulating change in behavior such as choosing environmentally friendly products and sorting waste. Sustainable technology and enhanced efficiency of resource utilization are

Figure 3. Banner for Copenhagen's Eco-Metropole vision.

seen to increase competitiveness and provide market advantages. Private enterprise and political bodies at various scales are called to seize upon sustainable development as an opportunity, and the image is propagated that there is much to gain for those who start early and keep ahead.[12] Environmental programs have to a lesser degree been characterized by traditional command and control measures via legislation and regulation. Other types of measures have become more important, aiming at increasing consciousness, mobilizing industry and the public, and creating incentives for cooperation and proactive engagement in solutions based on improved control and efficiency of resource flows rather than conventional end-of-pipe pollution control. Local Agenda 21, information campaigns, recycling programs, local investment programs for stimulating environmental innovation, green networks linking public authorities and industry, and branch treaties are examples of policy initiatives introduced in Denmark and Sweden in the 1990s.

This new type of environmental policy also implies new roles and challenges for local authorities. Decentralization has given municipalities in both Denmark and Sweden increasing responsibility for environmental protection and natural resource management. Municipalities are responsible for information and for initiating local collaboration in various ways. Such collaboration is often encouraged and supported by central government but is largely dependent on voluntary local initiatives.

This breakthrough in environmental policy based on ecological modernization was paralleled in the 1990s by advances in urban ecology, eco-city movements and sustainable city visions.[13] The European Sustainable Cities and Towns Conference was held in Aalborg in Denmark in 1994. The Aalborg Charter states that cities play a central role in ensuring sustainable development and encourages cities to develop a more integrated approach to local policymaking, harmonizing environmental, social, cultural, and economic objectives. The task for cities is to integrate principles of sustainability into all policy areas and to formulate locally appropriate strategies based on their respective strengths. Supported by national programs, cities began to develop sustainability activities with inspiration from Local Agenda 21, the Aalborg Charter, and urban ecology. Such initiatives have also been supported by the European Union (EU), which, despite limited power over local and regional planning, selected sustainable urban development as a central area for environmental and sustainability policy activities. The sustainability programs of the EU are based on Open Method of Coordination (OMC), a "soft form of governance" by which the EU makes efforts to encourage innovative initiatives through economic support and benchmarking.[14]

Environmental quality and awareness have also become an increasingly important element in competition between metropolitan regions.[15] Scandinavian cities are no exception to the

global move toward investment in place marketing, "imagineering," and branding.[16] This involves defining a sharp city profile and making efforts to ensure consistent communication of that profile. Some features of a city are emphasized in a city brand, while others remain unacknowledged—not least, the geographical locations of the city's ecological footprint. The brand may be based on an emerging or desirable characteristic, a vision or goal, rather than current reality, but in order to be credible and successful it needs to be backed up by consistent actions.

The underlying thesis of ecological modernization theory—"that the only possible way out of the ecological crisis is by going further into industrialization"—has aroused considerable debate.[17] The debate on ecological modernization has been helpful in highlighting nuances in the subtle complexities involved in institutional responses of industrial capitalist societies to ecological crises. Richard York and Eugene Rosa detail some logical, methodological, and empirical inadequacies in the theory and caution against uncritical commitment to ecological modernization, "because it may blind us to other options that have greater potential for bringing about ecological sustainability."[18] Our aim here is not to contribute to one side or the other in this debate. The relevance of ecological modernization theory for analyses of eco-branding is simply that eco-branding constitutes a common form in which "ecological modernisation appears in its guise of a pragmatic programme for business and government...a cover for business-as-usual with a slight green tinge."[19] Eco-branding presents images that are meant to strike us as very positive for the environment, but we stand to be reminded that we "should not assume that an appearance of environmental commitment necessarily corresponds with ecologically sustainable outcomes."[20]

Sustainability Activities in the Region

In order to gain an overview and evaluate the status of environmental and sustainability activities and programs in the Øresund region, Stefan Anderberg conducted an Internet-based inventory of programs and activities in municipalities in the region.[21] The inventory involved searches using environmental keywords and selected organizations, corporations, and municipalities, mostly in English, Danish, and Swedish, but also in German and French. The Internet provides remarkable opportunities for quick overviews, but one must be careful not to draw far-reaching conclusions. The uneven development of Internet use limits the value of this source for reliable comparisons. Material accessible on the Web is very heterogeneous, often arbitrary, and not comprehensive. Documents presenting general aims and priorities are common, while detailed documentation of activities is rare. The results of such inventories may say more about branding and imagineering than about real activities. Firms and municipalities engaged in similar activities may prioritize differently given variation in resource capacity for producing information and materials for public relations. Furthermore, terminology is not standardized but rather often improvised. The same phenomenon may be referred to by different names in various contexts—for example, green merchandise, ecological products, or environmentally friendly goods—and missing just one can skew the results of such an inventory.

This inventory shows that especially the major cities of Copenhagen, Malmö, and Lund, but also other major cities in the region, such as Helsingborg, Kristianstad, Landskrona, Frederiksberg, Roskilde, Køge, and Helsingør, have ambitious environmental profiling activities.[22] There are also

examples of suburban municipalities in Greater Copenhagen, such as Albertslund, Ballerup, and Glostrup, that have invested in environmental profiling in order to replace their traditional images as sites of large polluting industries. These municipalities strive, however, to maintain their industry and present themselves as attractive industrial locations. Landskrona is a similar Swedish example. There are also a few dispersed rural municipalities that declare high environmental ambitions, but their activities are difficult to assess in comparison with the more documented cities.

Danish municipalities have generally developed more environmental interests and are engaged in a broader array of sustainability activities than their Swedish counterparts. It is more common that Danish municipalities have programs for green procurement, green industry, environmental regulation, ecological information, and ecological housing and planning. About one-third of the Swedish municipalities appear somewhat uncommitted and passive, compared to one-fifth of the Danish municipalities. These passive municipalities are predominantly located in the periphery. Already associated with clean environments and nature, they do not see any pressing need to improve their green image.

In Denmark, Local Agenda 21 is compulsory by law and has therefore become an integrated part of municipal development plans. Since the discontinuation of central government support for Local Agenda 21 in Sweden, it remains in operation almost exclusively in larger cities, where it has a similar status as in Denmark. In Scania there are nine eco-communes that are part of a national network to stimulate local sustainability efforts (Scania consists of thirty-three municipalities). The Local Investment Program was an important Swedish venture, whereby nearly US$1 billion (six billion kronor) was distributed to Swedish municipalities for implementing Agenda 21 plans.[23] About half of all Swedish municipalities—seventeen in Scania—received support from this program, most of which are part of or close to major cities.

The Region on the International Sustainability Scene

The international visibility of the Øresund region as environmentally progressive—a place where sustainable development and ecological planning are deep-seated—is striking. Hosting international conferences and participating in international projects and networks have contributed to this visibility. In addition, there are organizations with highly visible programs, most notably the Øresund Environment Academy and Sustainable Business Hub, which seek to combine environmental initiatives with business development.[24] Furthermore, there are several international companies with home bases in the region that in various ways have developed or improved their environmental/sustainability image—for example, Hartmanns, Mærsk, Arla, and Tetra Pak.

Copenhagen, Malmö, and Lund dominate visibility (see table 1). These cities are also more likely to be found on German and French language websites and literature on Ökostadt/ecovilles. Helsingborg, Landskrona, Roskilde, and Kristianstad, with its Water Kingdom, are also fairly visible on English-language Internet sites.

Copenhagen is well known as a bicycle city, but it has many other sustainability strengths in housing, energy, and transportation. EMAS-certification of the municipality in 1998 clearly signaled its environmental profiling ambitions and aspirations to become the (unofficial) environmental capital of Europe.[25] In Sweden, Lund was one of the first cities to develop a green

Table 1. Internet hits of municipal environmental and sustainability programs and activities in the Øresund region.

Sustainable city		+ Lund	819,000	+ Øresund	18,700
+ Malmö	20,300	+ Malmö	249,000	**Water**	
+ Copenhagen	17,300	+ Roskilde	166,000	+ Kristianstad	206,000
+ Lund	14,300	+ Kristianstad	80,800	**Environment**	
Sustainable		+ Helsingborg	54,900	+ Øresund	46,700
+ Copenhagen	1,760,000	+ Landskrona	20,100		

Source: Google, September 9, 2007.

profile. But today it has been surpassed by Malmö, which in European contexts is often recognized as a sustainable city front-runner—a fact that is probably surprising to many citizens in the region. Malmö's visibility is primarily a result of consistently being very active in EU-sponsored international network projects, hosting and participating in conferences, and investing in eco-imagineering. Malmö has received much attention for a few flagship urban renewal projects emphasizing sustainable energy—namely, Augustenborg and Västra Hamnen (waterfront redevelopment in the harbor), but also for green roofs (Green Roof Center) and, most recently, the City Tunnel rail project.
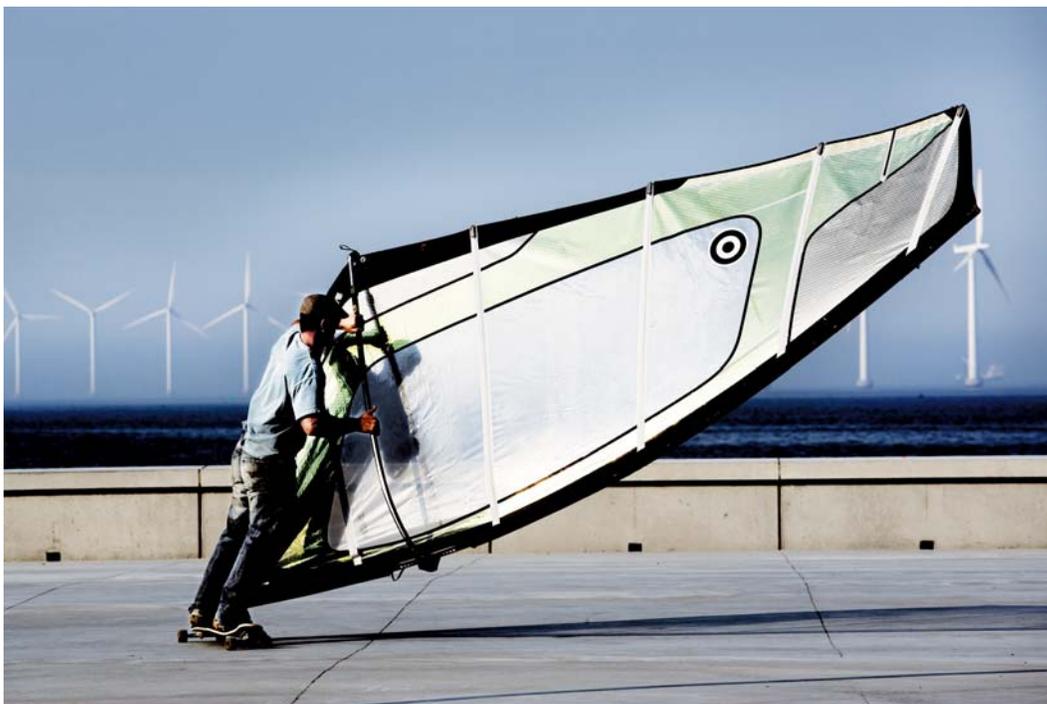
PHOTOGRAPH BY TINE HARDEN

Figure 4. From brochure: "Eco-Metropole: Our Vision for Copenhagen 2015."

While sustainability branding of the region has had some success, it is clearly the major cities that have most successfully penetrated international attention. Recently, the American environmental magazine *Grist* published a list of fifteen green cities in the world.[26] Malmö ranked fourth place and Copenhagen sixth place. Such rankings are commonly based less on careful measurements of environmental quality than on subjectivity and coincidence. Nevertheless, the results are not merely coincidental, since they are not an isolated event but rather an outcome of deliberate imagineering and eco-branding.

The Ecocity Forerunners: Copenhagen and Malmö

Copenhagen is a much larger city than Malmö, although there are significant similarities in the development of the two cities—and of other cities in Northwestern Europe. Manufacturing industries were severely hit by restructuring in the 1970s. Both cities stagnated but have since the mid-1980s experienced renewed growth. In recent years, growth in Malmö has been stimulated particularly by the construction of the Øresund Bridge, expansion of education, and strong growth in the Danish economy.

The Traditional Image: Crowded, Industrial, and Polluted Cities

Neither city has a long-standing reputation as clean and healthy. Both had large centrally located industries right into the 1980s, as well as large harbor areas which during the postwar period expanded rapidly on landfill in Øresund. For over a century, until the crisis of the 1970s, Malmö consistently remained among the fastest growing cities in Sweden. As late as 1949, 37 percent of manufacturing employment in Denmark was located in the inner city of Copenhagen.[27] Copenhagen long had been among the most densely populated cities in Europe. In the crowded inner city, housing was mixed with industry, and most of the problems of the early industrial European city still existed into the 1950s: crowdedness, unhealthy apartments, lack of light and fresh air, and related health problems.

During the postwar economic boom, pollution problems became more evident and received increasing attention. Coal and coke remained the dominant source of energy, and air pollution was a severe problem. The first air pollution measurements in the 1940s showed that areas in the center of Copenhagen were more polluted than London.[28] When regular air quality measurements started in the early 1960s, the average SO_2 (sulfur dioxide) level in central Copenhagen was about 80 μg/m^3 (micrograms per cubic meter) in the summer and 120 μg/m^3 in the winter, which can be compared with WHO's recommended ceiling of 50 μg/m^3 SO_2. Malmö had similar levels until the early 1970s. Industry made noise and created high-risk situations in connection with transportation and the use of chemicals in the vicinity of housing areas. Coke was also widely used in Malmö for heating, gas production, and some industries, but the energy sector diversified earlier in Sweden with electrification based on hydropower resources in the northern part of the country.

Movement out from the crowded inner city commenced in the 1950s, both industry and people finding space for expansion in the periphery. In Copenhagen, the inner-city population decreased by approximately 40 percent between the 1950s and the 1980s, and today less than half

PHOTOGRAPH BY PIERRE MENS

Figure 5. Øresund Bridge, view from Sweden toward Denmark. Salt Island on the right, with artificial Pepper Island on the left. Copenhagen is in the distant background.

the population of Greater Copenhagen live in the inner city. In Malmö, a dramatic expansion of the city took place with construction of large peripheral housing estates during the so-called million program (the construction of over 1 million dwellings between 1965 and 1974 in a country of about 8 million inhabitants). Parallel to the peripheral expansion of both cities, the inner cities became the object of large-scale renewal. In Malmö, a radical reshaping of large areas of the inner city took place through demolition and new construction, while in Copenhagen inner-city transformation more commonly took the form of renovations. In both cases, inner-city revitalization included new infrastructure and green areas.

Improved Urban Environmental Quality

As in most North European cities, air quality has improved considerably since the 1960s (see fig. 6.) In both Copenhagen and Malmö, levels of sulfur dioxide (SO_2) have generally been below 5 μg/

m³ since the 1990s, and concentrations of most other pollutants have also decreased in recent decades. This improvement in air quality started in the 1960s with the substitution of coal and coke with oil and large-scale investment in district heating. Today, 96 percent of Copenhagen's apartment buildings and 90 percent of Malmö's are connected to extensive district heating networks. Improvement continued in the 1970s with pollution control, closing of heavily polluting factories, and new types of fuel for heating. Today, the main source of air pollution is road traffic. Atmospheric concentrations of the typically car-related pollutants nitrogen dioxide and ozone have been relatively stable since the 1980s. In central Copenhagen it remains, however, a challenge to reach NO_2 levels below 40 µg/m³.

The development of water quality is more remarkable. Both cities have centrally located beaches that are very popular and crowded during summer. In Malmö, investment in new sewage treatment plants in the 1970s and continuous refinement of water management has resulted in cleaner water in Malmö's beaches than most beaches along Swedish coasts. In Denmark, water pollution control developed more slowly, but emissions to Øresund have been reduced by 80–90 percent since the 1980s, and beaches have recently been opened in the South Harbor.

The major trend in the regional pollution landscape is a dramatic change from a traditional emission landscape with a distinct difference between the polluted city and the clean countryside, to a more complex emission landscape in which pollution sources are more diffuse and primarily generated by traffic, consumption, and agriculture.[29]
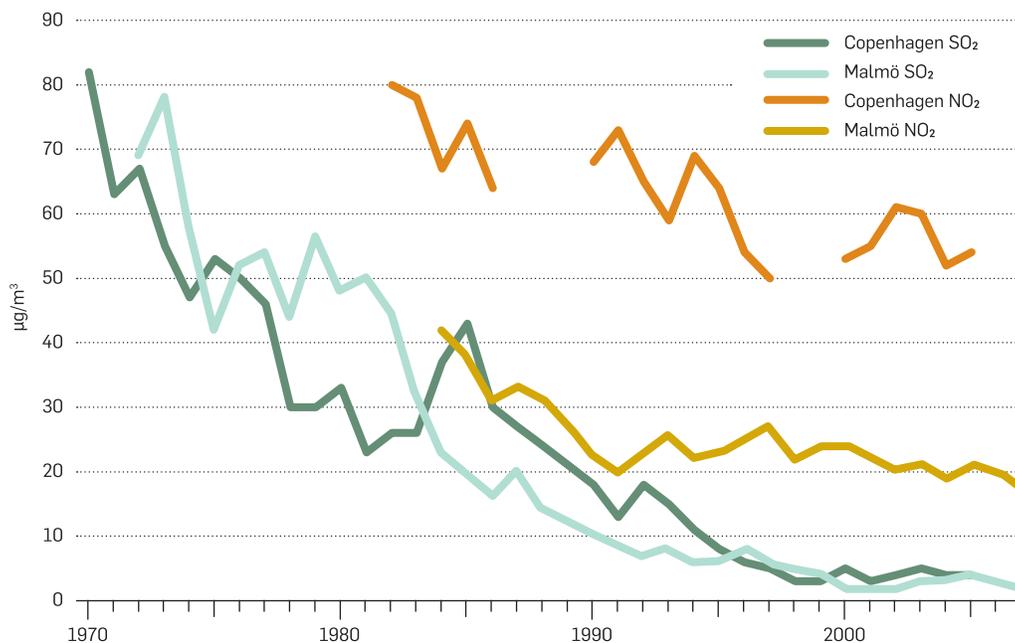

Figure 6. Atmospheric concentrations of sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) in the city centers of Copenhagen and Malmö.

Source: Luftkvaliteten i Malmö 2007, Malmö stad, Miljöförvaltningen, Historiske data om luftforurening (H.C. Andersens Boulevard), Københavns Kommune, Miljøkontrollen.

Transformation—Search for New Identities

With the economic crisis of the 1970s, population in both cities stagnated and the tax revenue base deteriorated as high-income groups moved out to residential suburbs and peripheral municipalities. Important industries such as textile and shipyards closed, regional policies disadvantaged the big cities, and new industrial development took place elsewhere. For Scania, this was a period of regional decline: from being one of the wealthiest regions in the country in the 1960s, it had become one of the poorest in the 1990s. However, since the mid-1980s Copenhagen and Malmö have experienced renewed growth in which immigration, education and research, trade, finance, and cultural activities have played key roles. Presently the Öresund region has a concentration of biotech education, research, and development, making it among the leading biotech regions worldwide.[30] For Malmö, the establishment of a new university college, the construction of the Öresund Bridge, and improved connections to Copenhagen and the booming Danish economy have been especially important.

This transformation has also involved a shift in city governance and a search for new identities, visions, and brands for the cities. Local governments became much more active in branding their cities in order to attract new investments and residents. "Wonderful" Copenhagen has a long history of presenting itself for tourists and international visitors. For Malmö, however, this was more of a challenge. In their search for a new identity and brand for place-marketing, both cities discovered that their previous environmental achievements were an asset, and they set about to utilize and refine that asset.

The Sustainability Branding of Two Cities

As home to many research milieus, environmental and development consultancy firms, and modern investments in environmental infrastructure, Copenhagen has reflected Denmark's self-image as an environmental pioneer. The capital city has been a center for showcasing Danish innovations and exporting Danish technology and environmental management tools. But it was not until the 1990s that the municipality and region began to actively draw on this potential for creating a green image of the city. Well initiated, its ambitions became grandiose. The location of the European Environmental Agency, opened in 1994, rendered legitimacy to the sense of being the environmental capital of Europe. Biking has been the most consistent and successful element in the green marketing of Copenhagen, but the city has cultivated other good practices of sustainable urban development, including ecological housing, green consumerism, development of green and recreational areas, and waste and water management. Copenhagen became the first EMAS-certified municipality in 1998. According to the present official vision, "Miljømetropolen" Copenhagen will be the world's most environmentally sound metropolis by 2015 and stand as proof that environmental care can fuel developmental dynamics.

Malmö has long been at the frontier of Swedish environmental initiatives. The sewage treatment plant and the remote heating system were among the most advanced in the world in the 1970s. However, the city was then more a site for implementing central state policies than

Figure 7. A Copenhagen brochure.

it was initiator of environmental projects. It was not until the mid-1990s that the city started to independently develop its green profile. This was facilitated by the central state and EU in the form of funding for Bo01 in Västra Hamnen (a national housing exhibition in the West Harbor) and Augustenborg (known for the Green Roof Center), and by emerging forms of cooperation with Copenhagen. These projects and cooperation with Copenhagen opened the door to many important networks. Malmö developed its sustainable development agenda and administration, and became an active partner in many networks. The city regularly hosts international workshops, meetings, and conferences, often with a high political profile—for example, Global Ministerial Environment Forum in 2000 and International Sustainable City Development Conferences in 2005 and 2007, boosting international exposure. Together with Malmö University College and other local and regional partners, the city founded a Center for Sustainable Urban Development, spanning research and business-related sustainability activities. In 2006 Malmö became Sweden's first Fairtrade city. Not surprisingly, Malmö was among the nominees for the Nordic Council's Nature and Environment Prize, which for the first time targeted cities in 2007. Malmö's explicit ambitions as a green and sustainable city are, however, more modest than Copenhagen's. City plans focus more on implementing national goals than developing Malmö's image as a sustainability city forerunner.

Figure 8. A Copenhagen brochure: "The World's Best City for Biking."

The Great Unsolved Problem

The great unsolved environmental problem in the Øresund region, a problem it shares with many other regions, concerns road traffic. Road traffic has continued to grow in both Greater Copenhagen and Malmö, and problems of road congestion have increased dramatically in recent years, especially in Copenhagen—disturbing its ambitions to be an environmental metropolis. While major infrastructural investments have increased rail capacity on both sides of Øresund, there are few signs of any structural shift away from car traffic. It is only in the inner cities where public transport, biking, and walking play significant roles for daily transport. New peripheral shopping and business zones accessible only by motorway are developed and allowed to expand.

Copenhagen has long-held ambitions to reduce car traffic by developing public transport. Car traffic continues to grow, however, in spite of increasing use of public transport. The number of vehicles passing the municipal boundary increased 30 percent between 1985 and 2005, while the average speed on major roads decreased by more than 20 percent, from 21 to 17 mph (34 to 27 km/h) (see fig. 9).

With continued economic growth in Greater Copenhagen, car ownership and commuting has increased dramatically. The number of cars in the metropolitan area (Hovedstadsområdet) increased 28 percent between 1992 and 2004. Regional commuting patterns have become more dispersed, complex, and difficult to cover with public transport. Figure 10 shows daily commuting in Greater Copenhagen in 1970 and 2005. The two inner-city municipalities are Copenhagen and Frederiksberg. In the suburbs, the former eighteen municipalities in the former County of Copenhagen include Albertslund, Ballerup, Bröndby, Dragør, Gentofte, Gladsaxe, Glostrup, Herlev, Hvidovre, Høje Taastrup, Ishøj, Ledøje-Smørum, Lyngby-Taarbæk, Rødovre, Søllerød, Tårnby,
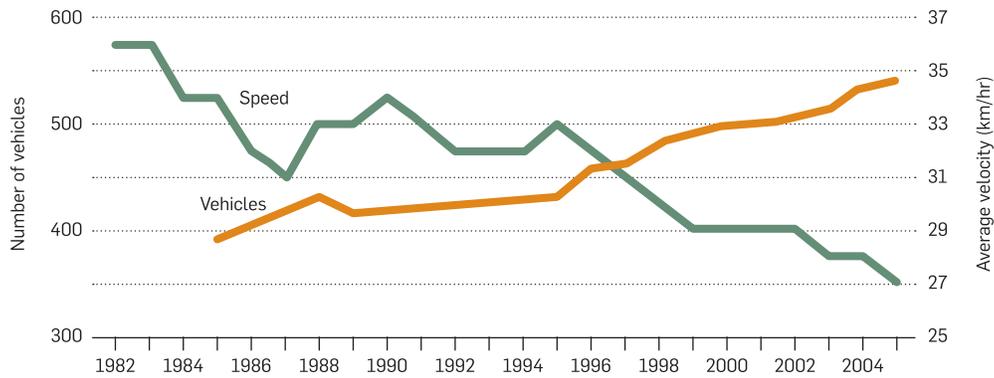
Figure 9. Number of vehicles passing the Copenhagen municipal boundary 6 A.M.–6 P.M. daily.

Vallensbæk, and Værløse. These counties were abolished and some municipalities merged in connection with an administrative reform in 2007. In the periphery of the city region, the former nineteen municipalities (reformed in 2007) in the former county of Frederiksborg and the former eleven municipalities in former county of Roskilde are shown.

In figure 10 the width of the arrows corresponds to the number of daily commuters. Traditional
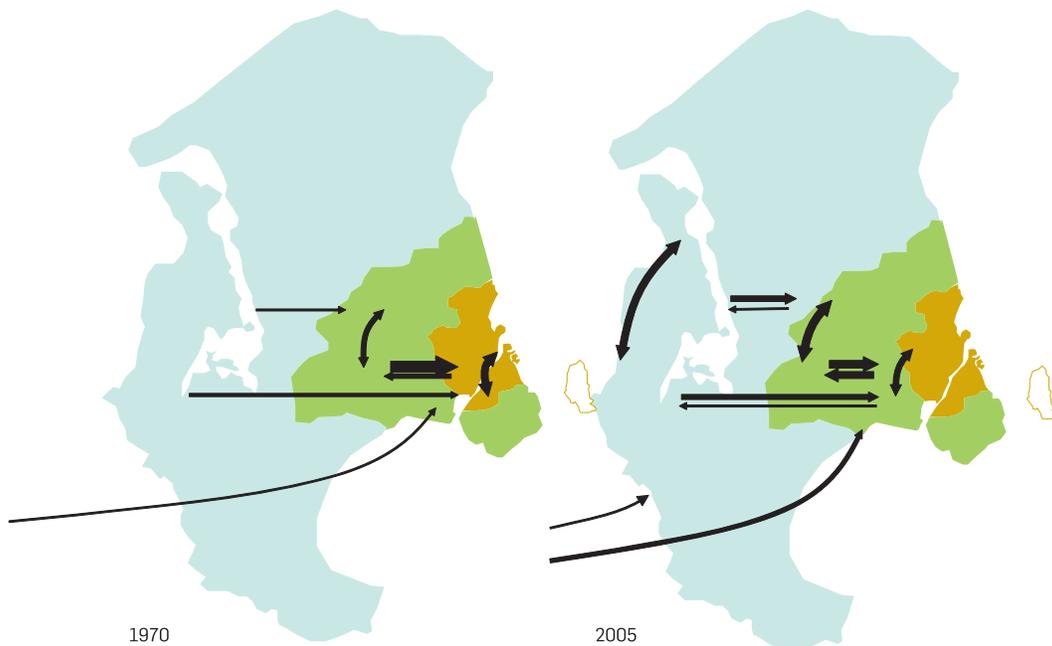

1970   2005

Figure 10. Commuting between the inner city, the suburbs, and the periphery of the city region, and between municipalities within these areas in 1970 and 2005.

Figure 11. Lilla Fiskaregatan, the main shopping street in Lund.

PHOTOGRAPH BY HUEI-MIN TSAI

commuting from the inner suburbs to the city center peaked in the 1970s. In 1970 these commuter flows varied from 7,300 to 120,000, and in 2005 from 20,000 to 85,000. Today about 60 percent of the working population in the region works outside their municipality of residence. During the last decade the flows that grew the most were commuting into the region from areas outside the metropolitan area (including Sweden) and the commuting of residents in the inner city.

On the Swedish side, development around Malmö and Lund follows a similar pattern, with a marked rise in commuting in general and long-distance commuting in particular. Public transport in Scania increased by about 7 percent per year during the last fifteen years, and yet car traffic and car ownership continues to grow. Cars account for about two-thirds of all travel in the region.

Material Flows and Geographies of Environmental Impacts

Most of the major postwar environmental improvements in the Øresund region took place well before sustainability and eco-branding of places came into vogue. To some extent the eco-branding of the region can be seen as greenwashing, not unlike that of private corporations marketing products such as motor vehicles as especially green and environmentally friendly even if they

pollute more than average. It has been suggested that "the risk of being conned by slick corporate greenwash has never been greater."[31] As cities vie for flows of capital and the so-called creative class, this risk appears to extend to political bodies of cities and regions.

Furthermore, a sizable share of these improvements were exogenously generated, through economic restructuring or national policy. While most pollutants continue to decrease, albeit at a slower pace, it is difficult to connect these improvements to the local initiatives highlighted in the region's and cities' recent efforts at eco-branding.

The shift from an industrial to a postindustrial economic base had major impacts on the environment. Consumption of industrial products in the region has, however, not diminished, but rather increased. This raises issues of environmental load displacement and ecologically unequal exchange, which in turn problematizes sustainability from a perspective of scale.[32] In a global system in which all places are economically connected, can any place claim to be sustainable based on local measures alone, without consideration of material linkages with other less sustainable places? Is local sustainability an oxymoron?

Unequal exchange entails "moving accumulated capital from politically weak regions to politically strong regions."[33] The concept of ecologically unequal exchange leaves the issue of value aside, focusing instead on material flows of trade and their ecological consequences. To paraphrase Immanuel Wallerstein, it entails moving the ecological footprint of politically and economically strong regions to politically and economically weak regions.[34] Ecologically unequal exchange takes place when societal relations of power allow for the physical transfer of environmental degradation—upon which much of our daily consumption rests—to places far away from our environmentally clean (and therefore often presumed sustainable) homes, cities, and regions. Helga Weisz's empirical analysis of Denmark's ecological trade balances corroborates the view that Copenhagen's greenness is achieved partly through ecologically unequal trade and the time-space appropriation of distant places.[35]

Conclusion

The goals of the Øresund region to become "one of the cleanest big city regions in Europe" and to "break the relation between wealth and negative environmental impact" were neither bold nor creative. The Øresund region was already one of the cleanest densely populated regions in the world and had for decades combined remarkable environmental improvements with economic growth. The difference between today and when the goals were formulated a decade ago is that now the Øresund region has a much stronger international position as a forerunner of urban sustainability. The region, and in particular Copenhagen and Malmö, have successfully eco-branded themselves and become visible on the global sustainability scene. It is difficult however to distinguish this from previous efforts to attract capital investment in competition with other cities.

This is certainly not to deny that there is a long list of municipal, regional, national, and EU initiatives, investments, programs, and activities with positive environmental impacts. But in a broader view it appears that the geopolitical economy of global economic restructuring and environmental load displacement through ecologically unequal exchange also play important roles in the region's recent environmental history. We have not been able here to even begin to

determine with any precision the relative importance of these forces, and must leave that an open question for further research. But the analysis does suggest that the comet careers of Copenhagen and Malmö on the eco-branding scene are based as much on capitalizing preexisting conditions as on remarkable successes of environmental policies and measures taken after the high-pitched goals were formulated.

NOTES

1. *Øresund—En region bliver til* (Copenhagen: Erhvervsministeriet, 1999), 69.
2. http://www.oresundskomiteen.dk/regionen-i-ciffror-statistik/se/html/00_00.html.
3. http://www.uni.oresund.org/sw2006.asp.
4. Värt att veta om Øresundsbron, Øresundsbro Konsortiet 2008, http://www.oresundsbron.com/library/?obj=6216
5. Stefan Anderberg, Sylvia Prieler, Krzysztof Olendrzynski, and Sander de Bruyn, *Old Sins—Industrial Metabolism, Heavy Metal Pollution and Environmental Transition in Central Europe* (Tokyo: United Nations University Press, 2000).
6. Andrew Jamison and Erik Baark, National Shades of Green: Comparing the Swedish and Danish Styles in Ecological Modernization, *Environmental Values* 8 (1999): 199–218.
7. Colin Fudge and Janet Rowe, Ecological Modernisation as a Framework for Sustainable Development: A Case Study in Sweden, *Environment and Planning A* 33 (2001): 1527–46.
8. Jonas R. Bylund, *Planning, Projects, Practice: A Human Geography of the Stockholm Local Investment Programme in Hammarby Sjöstad* (Stockholm: Stockholm University, 2006).
9. Miljöprogram för Öresundsregionen, Rapport från Miljöprogrammets styrgrupp, Öresundskomitteen, 2001, 5 (our translation).
10. Joseph Huber, *Die verlorene unschuld der Ökologie: Neue teknologien und superindustrielle entwicklung* (Frankfurt am Main: Fischer Verlag, 1982); Maarten A. Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Oxford: Oxford University Press, 1995).
11. Richard Florida, *The Rise of the Creative Class: And How It's Transforming Work, Leisure and Everyday Life* (New York: Basic Books, 2002).
12. Michael E. Porter and Claas van der Linde, Green and Competitive: Ending the Stalemate, *Harvard Business Review* 73 (1995): 120–34.
13. Graham Haughton and Colin Hunter, *Sustainable Cities* (London: Jessica Kingsley Publishers / Regional Studies Association, 1994).
14. Introduced by the European Council of Lisbon in March 2000, this term recognized and formalized previously established practices more than it contributed to forging new practices.
15. Christian Wichmann Matthiessen, Henrik Søgaard, and Stefan Anderberg, Environmental Performance and European Cities—A New Key Parameter in Competition between Metropolitan Centers, in *Monitoring Cities—International Perspectives*, ed. Wayne K. D. Davies and Ivan J. Townshend (Calgary: International Geographical Union, 2002), 119–41.
16. Søren Smidt-Jensen, Branding Medium-Sized Cities in Transition, in *Restructuring of Medium Sized Cities—Lessons from the Baltic Sea Region*, ed. Niels Boje Groth, Thilo Lang, Mats Johansson, Vesa Kanninen, Stefan Anderberg, and Andreas Cornett (Copenhagen: Danish Centre for Forest, Landscape and Planning, 2005), 159–70.
17. Gert Spargaren and Arthur P. J. Mol, Sociology, Environment and Modernity: Ecological Modernization as a Theory of Social Change, *Society and Natural Resources* 5 (1992): 323–44.
18. Richard York and Eugene A. Rosa, Key Challenges to Ecological Modernization Theory: Institutional Efficacy, Case Study Evidence, Units of Analysis and the Pace of Eco-efficiency, *Organization and Environment* 16 (2003): 273–88.
19. David Gibbs, Ecological Modernisation, Regional Economic Development and Regional Development Agencies, *Geoforum* 31 (2000): 9–19.
20. York and Rosa, Key Challenges to Ecological Modernization Theory, 273–88.
21. Stefan Anderberg, Ekologisk modernisering i Øresundsregionen? Miljø—Centralt i Øresundssamarbetet, in *Geografers forskningsbidrag til det Øresundsregionale udviklingsprojekt*, ed. Christian Wichmann Matthiessen, 67-80 (Copenhagen: Reitzels Forlag, 2005).
22. The municipalities of Frederiksberg and Copenhagen together form the inner city of Greater Copenhagen.

23. Daniel Nilsson, The LIP Programme—A Prerequisite for the Environmental Initiatives, in *Sustainable City of Tomorrow—Bo01—Experiences from a Swedish Housing Exhibition*, ed. Bengt Persson (Stockholm: Formas, 2005).

24. http://www.oresundscienceregion.org/sw13743.asp and http://www.sbhub.se/SbHub_eng/index.html.

25. Eco-Management and Audit Scheme is an EU voluntary instrument for recognizing organizations that continuously improve their environmental performance.

26. *Grist*, 15 Green Cities, July 19, 2007, http://www.grist.org/news/maindish/2007/07/19/cities/.

27. Stefan Anderberg and Erik Slentø, Stof og energistrømme i landskabet—Storkøbenhavns miljøhistorie, in *Byen i landskabet—Landskabet i byen*, ed. Sten Engelstoft (Odense: Geografforlaget, 2009).

28. Jes Fenger, *Luftforureningens historie: Fra et indendørs til et globalt problem,* 2d ed. (Denmark: Hovedland, 2004).

29. Ulrik Lohm, Stefan Anderberg, and Bo Bergbäck, Industrial Metabolism at the National Level: A Case-Study on Chromium and Lead Pollution in Sweden, 1880–1980, in *Industrial Metabolism: Restructuring for Sustainable Development*, ed. Robert U. Ayres and Udo E. Simonis (Tokyo: United Nations University Press, 1994), 103–18.

30. Steve Garlick, Peter Kresl, and Peter Vaessen, The Øresund Science Region: A Cross-Border Partnership between Denmark and Sweden, Peer Review Report, Programme on Institutional Management of Higher Education (IMHE), Organisation for Economic Co-operation and Development, Directorate for Education, 2006.

31. Fred Pearce, The Great Green Swindle, *Guardian*, October 23, 2008.

32. Alf Hornborg, Footprints in the Cotton Fields: The Industrial Revolution as Time-Space Appropriation and Environmental Load Displacement, *Ecological Economics* 59 (2006): 74–81; Alf Hornborg, Environmental Load Displacement in World History, in *Sustainable Development in a Globalized World*, ed. Björn Hettne (New York: Palgrave Macmillan, 2007); Helmut Haberl, Marina Fischer-Kowalski, Fridolin Krausmann, Helga Weisz, and Verena Winiwarter, Progress towards Sustainability? What the Conceptual Framework of Material and Energy Flow Accounting (MEFA) Can Offer, *Land Use Policy* 21 (2004): 199–213; Helga Weisz, Combining Social Metabolism and Input-Output Analysis to Account for Ecologically Unequal Trade, in *Rethinking Environmental History: World-System History and Global Environmental Change*, ed. Alf Hornborg, J. R. McNeill, and Joan Martinez-Alier, 289–306 (Lanham, MD: AltaMira, 2007).

33. Immanuel Wallerstein, *World-Systems Analysis: An Introduction* (Durham, NC: Duke University Press, 2004), 28.

34. Alf Hornborg, Towards an Ecological Theory of Unequal Exchange: Articulating World System Theory and Ecological Economics, *Ecological Economics* 25 (1998): 127–36.

35. Weisz, Combining Social Metabolism, 289–306 (Lanham, MD: AltaMira, 2007).

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