

THE CHALLENGE OF URBAN SUSTAINABILITY IN A GLOBALISING ECONOMY: MALMÖ CITY AS A CASE FOR AN INTEGRATED SUSTAINABILITY POLICY?

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Abstract

This paper discusses urban sustainable development by comparing two approaches: a place-based sustainability approach which focuses the direct and often production based impacts on a region, and a system-based approach which reveals the indirect and consumption based effects of globalised patterns of production, consumption and trade. Malmö, a small/middle-sized city in Sweden, is used as a case study. While many improvements have been made in the local environment the big challenge is the fact that Malmö, as well as other modern urban regions, has a large and globally dispersed Ecological footprint. That is, in the course of modernization and deindustrialisation of many European cities, the ecological (and social) burden from a continued high level of material and energy consumption has changed from a local and contemporaneous problem into a global and complex sustainability challenge.

Key words: Urban, sustainable development, ecological footprint, and governance

I. Introduction

More than half of humanity is urban and in 2030 around 5 billion people are expected to live in cities (unfpa.org). The challenge of urban sustainable development in the North as well as in the South is hereby huge (see e.g. Marcotullio 2006). This paper discusses urban sustainability in the context of relatively affluent economies in Europe. I will use Malmö, a small/middle-sized city in Sweden, as my case and discuss urban sustainable development from two different perspectives: a direct and *place-based approach* versus an indirect and *system-based approach*.

The paper is divided into six sections. First, a general introduction to historical and present day Malmö is made (section II). Then, in section III, an outline of

the place-based sustainability approach is given which shows the direct and often production based effects of a region's economy. As a contrast the system-based sustainability approach in section IV reveals the indirect and consumption based effects of globalised patterns of production, consumption and trade. As my ambition is to stay close to the empirical field, which is Malmö and the sustainability challenges of the present, these sections are illustrated by examples from the Swedish context and especially from Malmö. In section V an interview study is presented to shed light on how local actors view urban sustainability issues from a Malmö perspective. Finally, a concluding discussion is held in section VI.

This paper is written in the initial phase of a research project in the field of *human ecology*. Working as an interdisciplinary researcher, I aim at bridging the typical gap between quantitative and qualitative research approaches by combining some methods and perspectives. Further, my ambition is to apply what can be called a transdisciplinary quality, by which I mean that I as a researcher actively take part in an ongoing stake holder dialogue on urban sustainability issues in Malmö. That also places my project among the participatory and action-oriented research approaches.

II. The case of Malmö

Malmö is the third biggest city in Sweden and is located in the region of Scania furthest south of the country close to Denmark (see figures 1-3).¹ The city has 286 000 inhabitants (malmo.se).² Counting the region immediately surrounding the municipality it contains around 625 000 people. In the wider so called *Oresund Region*, where also Copenhagen is included, the total population amounts to 3,7 millions. Malmö's population is growing with a prognosis of around 310 000 inhabitants in 2014. Almost one third of its residents have a foreign origin and there are some 100 languages and 164 different nationalities represented.

During the 19th century an industrial boom took place that transformed the old merchant and agrarian centre into a modern industrial city. In the middle of the 20th century Malmö was one of Sweden's industrial centres with a world leading shipbuilding yard (*Kockums*), low unemployment and strong social democratic welfare policies. However, increasing international competition and a global economic restructuring in the post war period put many European cities under

¹ For general information on Malmö see: <http://www.malmo.se/servicemeny/malmostadinenglish>

² Data from 2008.

pressure (see e.g. Vall 2007). Traditionally important sectors in Malmö such as textile, shoes and leather industry started to decline already in the 1950's followed by closing-downs in the 1960-1970's. During the 1970's the European shipbuilding yards were challenged by newly industrialized countries in for example South East Asia. In 1979 the Swedish government nationalized Kockums, but already in 1986 its civil production was closed down.

Malmö was now thrown into a rapid deindustrialisation with high unemployment and growing municipal budgetary deficits. Adding to the industrial crisis, a general population increase and a high level of immigration in the later 1980's and in the 1990's resulted in accelerating social problems and in socio-economic segregation. High public expenditures and decreasing tax incomes deteriorated the municipal finances. In the second half of the 1990's, however, Malmö began to experience a phase of economic recovery and in the recent years the city has greatly improved its situation. The municipal economy has been strong – even if the effects of the on-going global economic recession are not yet fully clear.

What kind of city is Malmö now – and when looking into the future? Actors from public bodies as well as private business are making efforts to brand Malmö as a service- and knowledge based economy. Malmö is to be seen as a 'Knowledge City' or an 'Event City' pulsing with culture, creativity, communication, and people. Environmental concern is also high on the agenda and the City has gained international attention for its efforts in urban sustainable development.³ As in many other West European urban regions, what many see is the restructuring into a 'post-industrial' economy characterised by *decoupling* and *de-materialization*, that is, on production and consumption patterns that do not involve high levels of material input and energy consumption. As this paper will argue, as long as the total ecological footprint of Malmö and other modern urban regions remains at a very high level, one must consider this dematerialized city more of a hope than a reality.

³ More information at: <http://www.malmo.se/servicemeny/malmostadinenglish/sustainablecitydevelopment>

The Oresund area

Denmark (left) with Zealand and Copenhagen
Sweden (right) with Scania and Malmö



Figure 1-2. Malmö situated in the Oresund region and in the European Union

Sources: City of Malmö and the European Commission, Directorate General for Press and Communication.
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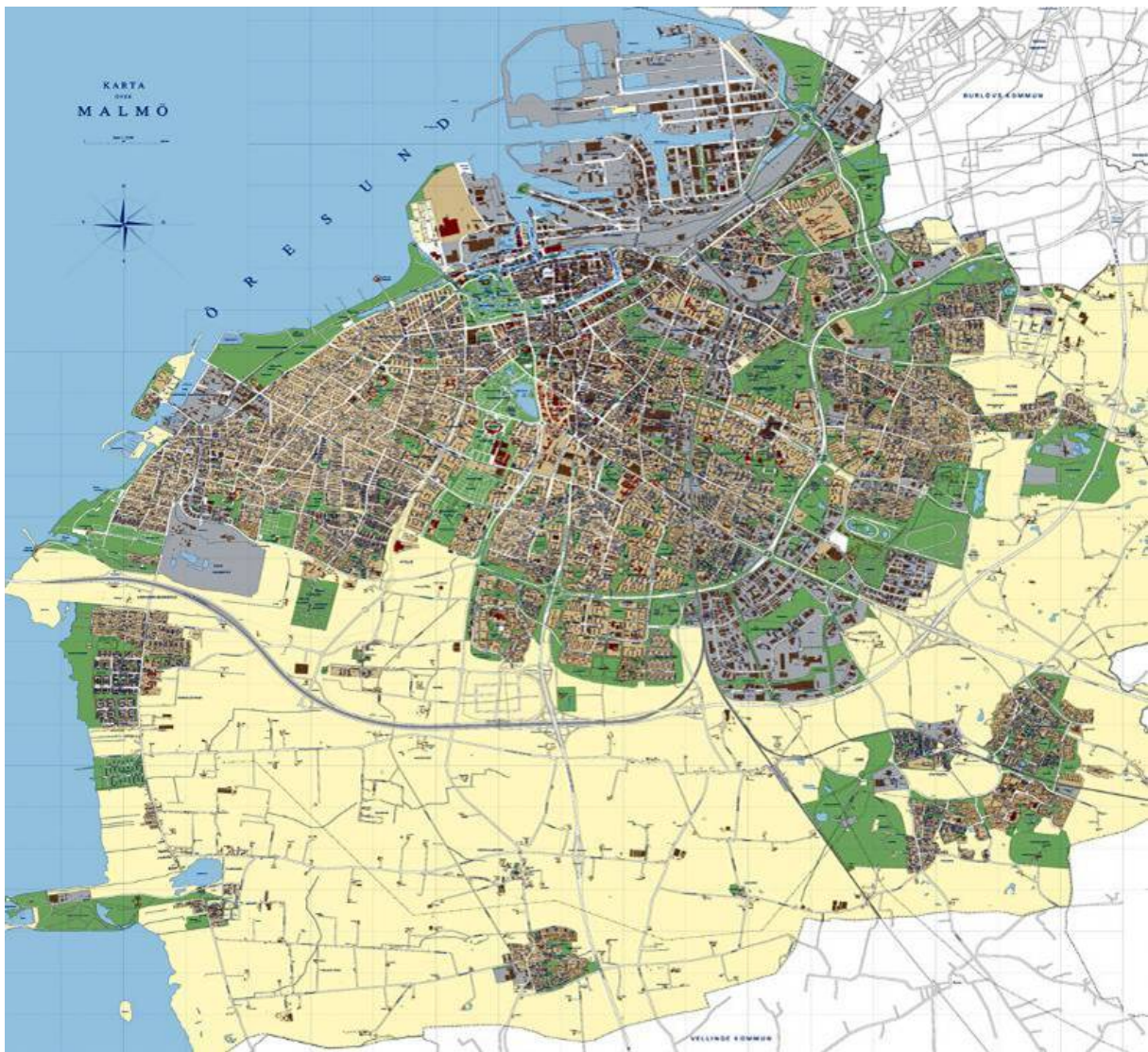


Figure 3. City map of Malmö
(Source: City of Malmö)

III. Urban sustainable development: A place-based approach

What is the status of Malmö if one is to assess urban sustainable development? Two contrasting views can be found by using a place-based versus a system-based sustainability approach. A *place-based approach* focuses on the actual geographical site and the ecological status of that place caused by for example emissions, resource extraction, landscape exploitation and other human activities. A *production focus* is often implicit, meaning that one takes into consideration the emissions and other effects from the producing sectors of the area in question. The place-based view is frequently used in environmental policy making in for example international negotiations on air pollutions such as

sulphur dioxide (SO₂) and carbon dioxide (CO₂). The emissions are thus allocated to certain geographical areas, for example to a nation or a region, as being produced/emitted from this site.

An example of a mainly place-based sustainability approach is the Swedish Environmental quality objectives (EQO) adopted by the Parliament in 1999, which also forms the basis of the environmental accounting of the City of Malmö.⁴ The principal aim of the Swedish EQO's is that the major environmental problems should be solved within one generation (Environmental Objectives Council 2008). There are 16 objectives which describe a sustainable and desirable environmental standard that is to be met by 2020 or, for the climate objective, by 2050 (see table 1). As one can see from the list, with some although important exceptions (e.g. objective 1 and 3-5), they are characterised mainly by a direct approach giving a picture of the ecological status in a site-based geographical perspective. Even if there of course are all kinds of connections to the global level for each of the targets, most objectives are addressed and structured according to a place-based approach. For example, the objective 'A rich diversity of plant and animal life' concerns the status of the nation, not what effects on bio-diversity the consumption patterns of the Swedish population causes.

<p>The Swedish Environmental quality objectives</p> <ol style="list-style-type: none"> 1. Reduced Climate Impact 2. Clean Air 3. Natural Acidification Only 4. A Non-Toxic Environment 5. A Protective Ozone Layer 6. A Safe Radiation Environment 7. Zero Eutrophication 8. Flourishing Lakes and Streams 9. Good-Quality Groundwater 10. A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos 11. Thriving Wetlands 12. Sustainable Forests 13. A Varied Agricultural Landscape 14. A Magnificent Mountain Landscape 15. A Good Built Environment 16. A Rich Diversity of Plant and Animal Life

Table 1.
The Swedish
Environmental
quality
objectives
 (Environmental
 Objectives
 Council 2008)

⁴ The Swedish Environmental quality objectives are at present subject to political discussions and may be revised.

Let's now turn to Malmö and how it can be described by a place-based sustainability approach. The most striking impression, looking at the recent development of say 25-30 years, is the overall environmental improvement resulting from deindustrialization and, also, from sharpened environmental policies at the national level. During the late 1960's an increased public awareness and political debate in Sweden resulted in the establishment of the Swedish Environmental Protection Agency and a new Environmental Protection Act. Higher demands and stricter control was now placed on industry as well as other actors impacting on the environment (i.e. municipalities, farms, households). The oil crisis during the 1970's also created a motivation to decrease the use of environmentally polluting fossil fuels. All of this had the total effect of shaping the trend of decreasing environmental impacts on the region of Malmö. As an example, a large improvement was when the city became connected to a district heating system, thereby phasing out many small scale and relatively inefficient and polluting oil- or coal fired boilers that formerly had dominated.

As a result, local environmental pollution in Malmö has declined sharply, for some important emissions such as carbon dioxide (CO₂) and nitrogen dioxide (NO₂) with more than 50% since 1980 (City of Malmö 2008). The decline of acidifying substances (SO₂) is even larger, from over 10 000 tonnes/year in 1980 to less than 1 000 tonnes/year in 2007. Pollutions from heavy metals such as cadmium (Cd), lead (Pb) and mercury (Hg) also have decreased sharply, even if one still finds increased levels due to long term accumulation in for example sea sediments. The emissions of nitrogen from the sewage plants in the municipality of Malmö have more than halved since the 1990's although one can now see a small upward trend. According to the Environmental report of City of Malmö, other areas where improvements have been made are in phasing out of atmospheric ozone depleting substances (CFC's) and in the efforts to meet the objectives 'Flourishing lakes and streams' and 'A balanced marine environment'.

This said, it should immediately be noted that these examples do not imply that the problems are by any means solved and the negative impacts totally levelled down. There are still important problems threatening the local environment and the following examples are highlighted by the Environment department of the City of Malmö (2008):

- **Urban air quality.** Even though several pollutants have decreased on a general level, national air-quality norms for nitrogen dioxide (NO₂) are exceeded on a regular basis at several sites in Malmö. This is mainly

caused by local traffic emissions and contributes to the pollution of air, water, and soil and acts as a hazard to health. Also, low level ozone (O₃) and air particles occasionally show increasing levels but stay within air-quality norms. Even if the times of urban smog are gone one can conclude that the air quality standard for some sites in the city centre does not meet Swedish environmental and health based requirements.

- **Traffic situation.** In the whole region commuting has been increasing not least due to the improved connections to Denmark and its capital Copenhagen via the Oresund bridge (Scania County Administrative Board 2007: 66). Heavy goods traffic and other transit traffic also show a steadily growing trend. In Malmö, even if more environmentally friendly alternatives like bike, pedestrian and public transport are increasing their share of total transport, the car is still a dominant mode of conveyance (City of Malmö 2008). More than 11 000 residents in Malmö have an indoor environment where the environmental quality objective levels of 35 dBA are exceeded. In total, at least 50 000 inhabitants are in some way or another negatively affected by traffic noise in their indoor environment.
- **Contaminated soil and ground water** and the threats from the use of chemicals. Even if the levels of several chemicals and heavy metals connected to the industrial era have decreased, many threats are still present as these compounds are accumulating on a long term basis in the ecosystems including in the living organisms. In the city area of Malmö, ground water quality shows increased levels of hazardous chemicals and soil remediation is often necessary when redevelopment projects are planned.
- **Eutrophication and linear flows of phosphorous.** Although sources of nitrogen (N) and phosphorus (P) leakage have diminished due to for example better sewage treatment and fertilising strategies, these emissions are still a problem. Phosphorus demands special attention as it is a non-renewable resource essential to food production and the metabolism of all living organisms including the human body. Eutrophication is a persisting problem in inland water (streams and lakes) and also in some coastal areas. Due to the time lags and accumulation effects in the nutrient chains of the ecosystems, and also because the origin of these emissions comes from many sectors of the industrial society (including non-Swedish sources), no clear improvements in the trends are yet seen.
- **The landscape threats from urban activities.** In the case of Malmö one prime concern is the pressure that a growing population and economy puts on the surrounding landscape. Only in some fifteen years (since 1995)

more than 1/6 of the agricultural land areas of Malmö have been exploited for other purposes (City of Malmö 2008: 34). Organic farming is practiced only on around 4% of the total agricultural land in the municipality. Even if the ambitions of nature protection are generally very high, the pressure on the landscape is fundamental. Many biotopes, including rare species of fauna and flora, are either gone or under threat. Efforts are made to protect and reconstruct wetlands, for example, but one must keep in mind that this is from an extremely impoverished level. Larger areas of forest are on the whole non-existent in Malmö, which is totally dominated by urban structures and agricultural land. The coastal area including the Oresund are subject to ambitious environment monitoring but threats such as oil spills from shipping are permanently present.

IV. Urban sustainable development: A system-based approach

One may argue that for several reasons a place-based approach does not give a comprehensive sustainability assessment. First, many activities connected to the urban metabolism are not easily located within specific geographical borders as for example international flight and shipping. Second, many environmental problems of today are not primarily local in their nature but are connected to global biosphere responses. The typical example is of course climate changes caused by greenhouse gas emissions. Further, the ecological burden of one geographical area may be very – and in some cases extremely – shaped by its production sector, and may not mirror the activities of that area in general. A relevant example for Malmö is that when a new natural gas-fired power plant is now being established in the harbour of the city, the greenhouse gas emissions will increase making the local climate statistics looking worse. But at the same time, the plant will have the ability to replace older and coal-based production units seen on a regional level and thereby lower the total emissions (eon.se). The main argument against the place-based sustainability approach is, however, that our societal metabolism – and by this I mean the total material and energy throughput to cover human needs (and desires one should add) and to produce and reproduce infrastructure – is essentially global in its nature. For example, one can find very clean and healthy environments but where the inhabitants' consumption patterns indirectly cause a heavy ecological footprint. The lifestyle of this population thus relies on material extraction, energy consumption and environmental impacts in other parts of the world, a phenomenon called *environmental load displacement* (see e.g. Hornborg et al. 2007).

As argued by many researchers, as well as NGO's, another way of depicting the socio-ecological system is therefore to pay attention to global production, consumption and trade patterns. We can call this an indirect and *system-based view* or a *consumption based approach*. What is in focus when assessing urban sustainability is then the impact from the total consumption, irrespective of where the different parts of the production chain and the environmental impacts from it are located in time and in space. For example, the energy consumption of a typical urban region is connected to the extraction, refinement, distribution and consumption of fossil fuels, of which the socio-ecological consequences are spread all over the world including as waste molecules into our biggest global common, the atmosphere. The consumption based approach focuses on the total life cycle of goods and services but puts the price tag at the stage of final demand which can be either private or public consumption.

As the purpose of this paper is to give an overview rather than to examine different methodologies in detail, I will here point to two brief examples illustrating the system-based approach. The first is the methodology of *Ecological Footprinting* (EF), which measures humanity's demand on the biosphere in terms of the biologically productive land and sea areas required to provide the resources used and to absorb the waste generated (WWF 2008). A nation's (or a city's) footprint is the sum of all the cropland, grazing land, forest and fishing grounds required to produce the food, fibre and timber it consumes, to absorb the wastes emitted from energy use, and to provide space for its infrastructure regardless of where they are located on the planet. In 2005 the global EF was 2,7 *global hectares per capita* (Global Footprint Network 2008).⁵ The single largest demand humanity puts on the biosphere, around half of the total EF, is the so called *Carbon Footprint*. This component represents the bio-capacity needed to absorb CO₂ emissions from fossil-fuel use and land disturbance, other than the portion absorbed by the oceans. On the supply side the total productive area, or what is called the global bio-capacity, was 2,1 *gha per capita*. Humanity's footprint thus exceeds the Earth's total bio-capacity by around 30% and shows an increasing trend. This overshoot implies an overexploitation of the ecological systems and a depletion of natural resources and may result in impaired bio-capacity and/or irreversible loss of ecosystem services.

⁵ All EF data are taken from the Global Footprint Network. A global hectare is a hectare with a world-average ability to produce resources and absorb wastes and is yearly estimated by the global footprint network and used in the standards of the methodology.

There is a clear North-South divide apparent in the EF statistics. High-income countries have an average EF of 6,4 gha per capita, middle-income countries 2,2 gha/cap and low-income countries an average of only 1,0 gha per capita. As an example, the average American citizen has an EF of around 9,4 gha, the average European Union citizen one of 4,7 gha, but an average Chinese and Indian citizen only 2,1 and 0,9 gha respectively. Even if many high-income countries have abundant natural resources and a high bio-capacity, as for example Sweden, it is evident from both the global nature of the Carbon footprint and the typically big proportion of imported goods into their consumption portfolios that their area requirements and environmental impacts do not stay within their own borders.⁶ One may continue by saying that this must thus also be the case for a typical European urban region, such as Malmö. We may expect that a big proportion of the land requirements from such urban economies are not only connected to the exploitation and degradation of its own environment but to a spatial displacement and a temporal diffusion of environmental impacts. As consumption levels have increased, following general GDP growth, the throughput of material and energy and the total environmental burden have reached a level that is by many judged as unsustainable (see e.g. Steffen et al. 2004).

The Ecological footprints of every nation in the world are calculated each year by the Global Footprint Network. In 2005, the Ecological footprint for Sweden was estimated to *5,1 gha per capita*. The exact figure of the EF for Malmö is so far not calculated but is at present subject to investigation.⁷ Another city in Sweden, Gothenburg with some 500 000 inhabitants located on the south west coast, has however done such calculations and these may serve as a relevant example. The local EF of Gothenburg was estimated to around *4,2 gha per capita* in 2002 (City of Gothenburg 2007). Two other smaller Swedish municipalities were also estimated, Robertsfors and Luleå, and their EF was 4,7 gha and 4,5 gha per capita respectively. It should be noted, that the Swedish EF figure has recently been subject to a revision when it was decided that nuclear energy should be omitted from the international footprint standard (Global Footprint Network 2008: 30 ff). If nuclear energy would be included, the

⁶ Of course, all high-income countries do not have a high bio-capacity or a high import share of their economy. In the case of Sweden it is an import- and export-oriented economy.

⁷ A software tool called REAP (*Resource and Energy Analysis Programme*), which is able to assess the local Ecological footprint as well as other important consumption based statistics, is currently developed in a Swedish context by the Stockholm Environment Institute (SEI), the World Wide Fund for Nature (WWF) and some Swedish cities, e.g. Malmö.

Swedish figures would increase with some 20%. In my example I use EF figures with the nuclear energy footprint excluded.⁸

As we can see, Gothenburg had a slightly lower footprint than the two smaller and more rural municipalities, which may be a consequence of the more dense structure of bigger cities allowing for lower average travel distances, more developed public transport systems, relatively efficient district heating systems, etc. However, this higher density also means that such an urban region probably is more dependent on appropriation of spaces outside of its own land area for its consumption of material and energy. We can illustrate this by the following example given only as a brief sketch. Let's make the hypothesis that Malmö had the same Ecological footprint as Gothenburg in 2002, that is 4,2 gha, and add to that the population of that year of around 265 500 inhabitants (malmo.se). This means that the total appropriation of bio-productive land and water areas from the consumption of Malmö amounted to 1,1 million hectares, or 11 000 km², including areas needed to absorb carbon dioxide from fossil fuel use (the Carbon footprint). This can be compared to the land area of the whole Scania which is of this size.⁹ The total area of the Malmö municipality is around 335 km².¹⁰ Coming as no surprise, Malmö is thus extremely dependent on areas outside of its own borders, its own area covering only a few percent (around 3%) of the totals required to match its consumption patterns.¹¹

The second example of a system-based approach concerns greenhouse gas emissions caused by average Swedish consumption patterns including, I here assume, the case of Malmö.¹² In a recent report from the Swedish Environmental Protection Agency (2008) a production versus a consumption based approach is discussed for three greenhouse gas emissions: carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). The result is illustrated in figure 4. As we can see, the production based emissions totalled around *76 million tonnes of CO₂ equivalents*, including international air and sea transport and the production of exports. In a consumption based perspective, the export connected

⁸ The Gothenburg estimation for 2002 was actually 5,5 gha with a nuclear energy footprint of 1,35 gha included. The EF for Sweden, including nuclear energy, was estimated to 6,7 gha in 2002 by the City of Gotenburg (2007).

⁹ The land and inland water area of the region of Scania is 11 368 km².

¹⁰ The land and inland water area of the Malmö municipality is around 156, 5 km² but I here add the sea water area of 178,7 km² as the city is located at the coast line of Oresund which ought to be counted as a bio-productive area.

¹¹ One should be aware of that this whole example is of course a very hypothetical one, since a typical European urban area does not have the kind of bio-productive qualities needed for biological production and assimilation in any case.

¹² A detailed analysis of Malmö greenhouse gas emissions using a production and a consumption based approach may be carried out in further studies but here I use the average Swedish figures as a basis for a general reasoning.

emissions are to be excluded (24 Mtonnes CO₂e) while the emissions from manufacturing and transportation of imports are to be added (43 Mtonnes CO₂e). Swedish consumption in 2003 altogether caused greenhouse gas emissions of 95 Mtonnes CO₂e. This equals around 10 tonnes CO₂e per capita which is allocated between private consumption (around 80%) and public consumption (20%). The conclusion is that greenhouse gas emissions are at least 25% higher from a consumption based than from a production based perspective. The report underlines that what is described is only orders of magnitude and that there are large uncertainties, especially concerning the consumption related emissions from non-EU trade, which is probably underestimated (Swedish Environmental Protection Agency. 2008: 25f). Thus it is very likely that the consumption based emissions are even higher.

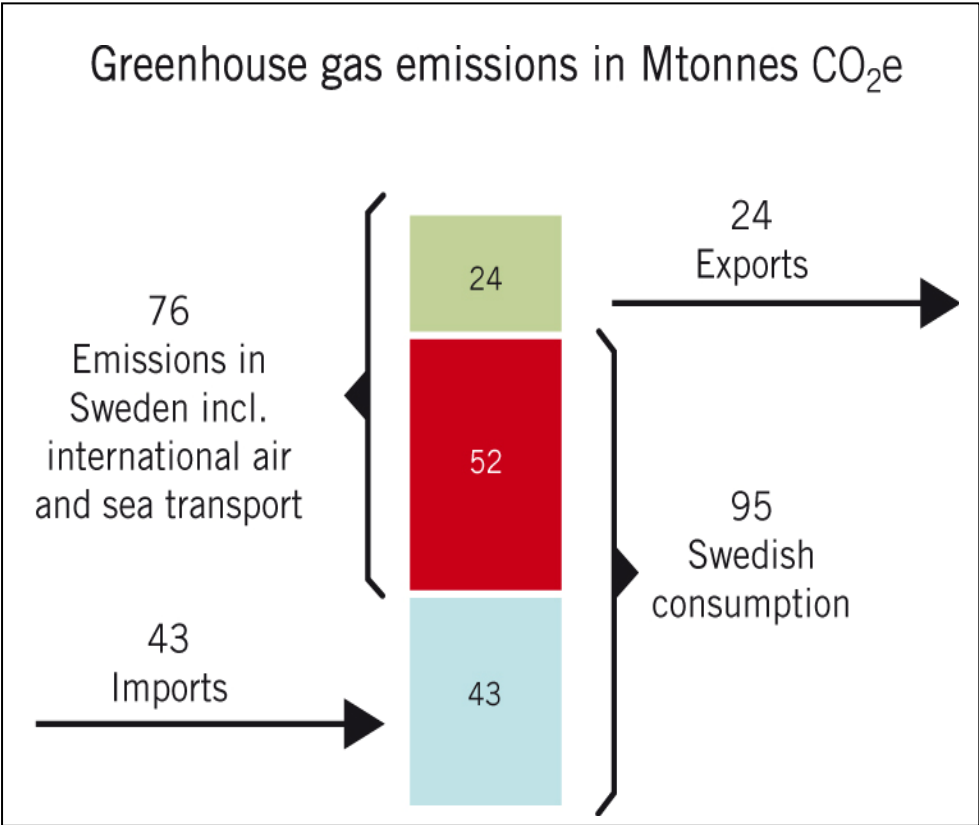


Figure 4.
Swedish
greenhouse gas
emissions in
2003
(Swedish
Environmental
Protection Agency
2008)

V. Voices from Malmö

As stated in the introduction my ambition is to take a step further from only describing the urban sustainability dilemma, by bringing the research results with me into the social context of different actors in Malmö. By doing this I also see this project as a participatory and action oriented research approach, trying to bridge the gap between the typical researchers' and practitioners' roles. During the spring of 2009 I have conducted an interview study as an introductory survey of my research field (Mar-Apr). In total 12 interviews have been made with actors connected to the Malmö sustainability politics in one way or another. The interviews took place at the participants' offices and each lasted around 40 minutes. In addition to some 5 semi-structured questions – or themes rather – I also included a small questionnaire the results of which may be discussed in quantitative terms. The persons interviewed represent the highest political level in the city (City executive board) and relevant positions, often directors, at the city administration level and other public bodies:

- Local Government Commissioners from the Social Democratic Party, the Conservative Party, and the Green Party ¹³
- City Planning Office
- Environment Department
- Department of Internal Services
- City District Department
- Trade and Industry Agency
- Street and Parks Department
- VA SYD (water supply, sewage treatment and waste management)
- Malmö University

The empirical material from this study will be further developed in the research project to which this paper is an introduction. As the scope of the survey is quite limited, the results should only be seen as hinting at some directions and perhaps as opening up some interesting questions. The results from the questionnaire do not imply any aspirations to make general statements about the opinions in Malmö. Further, the purpose is not to mirror the exact statements of different actors, and therefore I do not name persons when referring or quoting. All interviews were done in Swedish and so the material has been subject to the author's translation. The result from the questionnaire is presented in tables 2-3 with capital letters marking the different questions. These will now serve as a

¹³ Malmö is governed by a left wing majority in cooperation with the Greens. The City Council Election in 2006 gave the Social Democrats 38%, the Conservative Party 25%, and the Green Party around 6% of the votes (malmo.se).

basis for some reflections on Malmö and urban sustainable development with the place-based and the system-based approach in mind.

Table 2.
Number of participants answering yes, no or don't know to the following questions

No	Do you agree on the following question (Yes / No / Don't know)	Yes	No	-
A	Do you think that Malmö has become a more sustainable city in the last 20-30 years?	10		2
B	Do you think that Malmö is moving in the direction of urban sustainable development right now?	12		
C	Do you think that the infrastructure and metabolism of Malmö is connected to global sustainability issues?	10		2
D	Should the City of Malmö actively try to influence its citizens to adopt sustainable consumption patterns?	12		
E	Should the City of Malmö actively try to influence its citizens to adopt sustainable lifestyles?	11		1
F	Should the City of Malmö actively try to decrease the throughput of material and energy in the city?	9		3
G	Should the City of Malmö try to radically increase the levels of Fair trade consumption in the city?	10	1	1

Table 3.
Weights between 0-10 given to the following questions or statements

No	Assess a weight between 0-10 to the following questions:	Average	Median	Max	Min
A	How close to urban sustainable development would you consider Malmö to be right now?	5,8	6	8	2
B	How worried are you about the local environmental problems such as urban air pollution, traffic volumes, and land use issues?	5,4	5,5	8	2
C	How worried are you about the global situation concerning sustainable development, for example climate change, poverty, resource conflicts?	8,6	9	10	3
D	How important is the concept of urban sustainable development for the strategic discussion of Malmö's future?	9,7	10	10	8
Distribute the weight 0-10 between the following two statements:					
E	Malmö should prioritize to work with local and place-based sustainability issues, such as urban air quality, the traffic situation, the waste system and the social dimension of sustainable development in the city.	5,6	6	7	3
F	Malmö should prioritize to work with global and indirectly connected sustainability issues, such as climate change, fair trade, global justice and ecological footprints	4,4	4	7	3

General views

I started the interviews by asking some general questions on Malmö and urban sustainable development. I wanted to see if the actors found the concept important and at which stage they considered Malmö to be. As you can see from the tables (2A-B and 3A), there was a strong agreement on that Malmö has become a more sustainable city in the past 20-30 years, that is, since the industrial crisis and the following structural changes. All of the participants agreed on that Malmö is moving in the direction of urban sustainable development right now. As we have seen from the system-based approach, this optimistic view may in some respects be questioned as Malmö, as well as other European urban regions, have typically improved their local environment (more or less) but still cause a high Ecological footprint. When asked to put a weight between 0-10 on how close Malmö is to something they consider as urban sustainable development the average weight amounted to 5,8. However, one may note that the answers ranged from a maximum of 8 to a minimum of 2, implying that the persons have rather divergent views on how close (or far from) urban sustainable development that Malmö really is. One may conclude that the participants seem to have quite an optimistic view when looking at the recent development and the direction of Malmö at the moment, but that they think that there is quite a lot left to do to realize an urban sustainable development.

Further, one can note that all of the participants agreed on that the concept of urban sustainable development is *very* central for the strategic discussion of Malmö's future (3D). The most frequent weight given is the maximum of 10. There is a broad political consensus about the importance of enhancing urban sustainability policies, even if the content of such policies is a matter of debate, was the view held by one of the politicians. 'We talk to each other and we can argue in an open and tolerant atmosphere, and there is an increased openness to cross-sectional cooperation' said one participant, while another stressed that improvements were still needed. To sum up, even if there certainly are divergences of opinions on the implications of the concept of urban sustainable development, there is some sort of basic commitment which is encouraging for the many concerned with sustainability issues in Malmö.

Are we worried?

I was interested in knowing how worrying different actors find the sustainability situation at a local but also at a global level, as this may (or may not) be reflected in the motivation to pursue different policies. When asked how worrying local environmental problems such as air pollution, traffic volumes,

and land use issues are, the average weight in the study is 5,4 out of 10 (3B). When asked instead how worrying global sustainability issues such as climate change, poverty, and resource conflicts are, the average weight is 8,6 with 9 as median (3C). The answers are distributed with a maximum/minimum of 8/2 for (3B) and 10/3 for (3C). This shows that in general the participants are much more worried about the global situation than about the status of the local environment. However, it can be noted from my material that 50% of the participants gave a weight higher than 5 when assessing their worry for the local problems. The local challenges most often mentioned are the energy system, the traffic situation and the social dimension of sustainable development.

Is a system-based approach relevant?

As we have seen in this paper, the infrastructure and metabolism of Malmö is intimately linked to global sustainability issues through production, trade and consumption. Most of the participants agree on this global connectedness, although I also found a slight uncertainty on this subject (2C). Perhaps it is more a matter of how one poses the question as we are often not inclined to apply a system-based view on the infrastructure of our daily lives. When asking if the City should actively try to influence its citizens in adopting more sustainable consumption patterns and lifestyles the answer was very positive (2D, E). Perhaps this strong consensus reflects a Swedish tradition of policy making where for example welfare policies often interfere with the private sphere of individuals. Not surprising, there is however divergent opinions on *how* these policies are to look. Several persons stressed that they favour such policies that pull rather than push people toward sustainable choices and habits. The city must offer attractive choices and sustainable urban structures so that individual citizens are facilitated to adapt more sustainable lifestyles but not hindered to.

The question that caused most trouble in my survey was no 2F: Should the City of Malmö actively try to decrease the throughput of material and energy in the city? Even if 9 out of 12 approved that so should be done, there was a general hesitation and 3 persons chose not to answer. Of course it is difficult to give a quick yes or no to such big question. But I do think that this highlights one potentially difficult paradox in the quest for urban sustainable development: growth versus sustainability. Malmö is a growing city both physically and economically. As has been shown, *absolute decoupling* of material and energy consumption from economic growth is still not the general case in the EU-economies (European Environment Agency 2005). There are of course positive examples, often related to end-of-pipe solutions bringing environmental pressure from resource and energy use down. But in many cases of decoupling this is

rather a sign of an increased import of natural resources and of goods putting their environmental burden from production elsewhere. The total input of material and energy generally remains at a high level in the EU. In a context of a growing GDP what we then have is a case of *relative decoupling*, meaning a decline in relative terms but which may still imply a constant or even increasing material and energy consumption in *real* terms. Relative decoupling seems to appear in Malmö in some important cases such as in the total energy consumption (City of Malmö 2008: 40). But as for transport and waste, two other important examples, the volumes continue to follow the growth trends of the EU-economy, also in Malmö.

Priorities

One interesting discussion in the interviews emerged from a task that was given to the participants, namely to distribute the total weight of 10 between two policy priorities. Should the City of Malmö prioritize:

- Local and place-based sustainability problems, such as air quality, the traffic situation, the waste system, and the social dimension of sustainable development in the city, or
- Global and indirectly connected sustainability issues, such as climate change, fair trade, and ecological footprints.

Even if these two policy areas should be seen as parallel, as soon will be discussed, I was interested in seeing how the representatives of the City regarded the scope of municipal policy making (3E-F). As we can see the weights given points to the prioritisation of local and place-based issues (average 5,6 – median 6) before global and indirectly connected ones (average 4,4 – median 4). A common view among the participants was that the local issues must always come first, as this is the principal task for every municipality. Here is where we have the responsibility *and* the ability to take action, it was meant. But at the same time there was an awareness of that the global linkages may become increasingly important. If the global sustainability issues are important for the citizens of Malmö– then it is also the City's issue, one participant argued. This is a matter of trustworthiness and democratic principles, this person continued. But, as one politician argued, the local actions will in many cases link to the global level. When discussing this subject, it became clear that the two perspectives are often hard to separate in practice. If for example Malmö develop a successful transport sustainability policy, this will not only have local but also systemic effects: physical/ecological (e.g. reduced air pollution) but also social/political (e.g. showing a good example). The place-based and the system-based approaches are therefore not to be seen as mutually

excluding, but rather as both necessary and in many cases reinforcing and complementary policies. The new thing is perhaps that the relevance of a system-based perspective needs to be made more explicit in local policy choices.

VI. Concluding discussion

The place-based sustainability approach can be called the traditional approach and is so far the most used in for example environmental policy making. It suits the normal state of affairs with bodies of authorities at different geographical levels such as municipalities and national governments. One can argue that the place-based approach is advantageous since normally actors in a given geographical area have some sort of control of the activities at their own location (even if this certainly is not always the case), for example emissions from production units or the energy infrastructure. The approach may be helpful with its clear focus providing a tool for local target setting and sustainability assessments. However, as we have seen it is hard to argue against the relevance of a system-based approach in assessing modern urban regions such as Malmö. Urban economies are typically dependent on the interaction with surrounding socio-ecological systems, including distant areas on the globe and also future generations to come. This makes me inclined to say that the system-based sustainability approach necessarily has to complement the place-based approach in modern city governance.

A main challenge in city governance is therefore to negotiate on, and to the degree possible decide upon, *what* scope the local sustainability policy should have. To what extent are the indirect socio-ecological impacts of trade and consumption a relevant matter? To what degree should for example the City of Malmö try to deal with the global footprints of its citizens' life styles? Traditional environmental policy has often focussed on local and regional problems. To take another standpoint and to develop new strategies is partly to challenge a tradition. As Malmö is a city seeking a new 'post-industrial' identity, I suggest it could be an interesting case of *integrated sustainability policies* that develops the place-based and the system-based approaches in combination. As so often is the case in life, the key perhaps lies less in the ability to choose but in the ability to manage to do both.

Many sustainability experts argue that the total levels of material and energy throughput must be radically decreased in high-income countries. Relative decoupling will not be enough, taking into consideration a long term growing global economy with special attention paid to the economies in the South. An absolute decline of total resource use is needed. In the light of the system-based

approach, my reflection is that the tension between growth and sustainability must be at the core of a deeper discussion on urban sustainability in affluent economies. At the same time as there are great possibilities for local change, including to challenge growth-oriented solutions, there are also restrictions. How are different policy goals interplaying or conflicting with each other? How do the local power relations look like? Which restrictions and opportunities can be identified given present economic structures? And, also, what is accepted by the voters? It is easy to fall into the trap of only seeing problems. But, as one person reasoned, perhaps there is a tendency to view different ‘restrictions’ as more rigid and definitive than they actually are? May these obstacles often be of a mental and social character rather than of an economic or physical one? I find this line of thinking encouraging, as I myself consider the transformation towards urban sustainable development a process where creative re-thinking on the definitions of the problem as well as the solutions are needed.

References

Publications

City of Gothenburg (2007) *Ekologiska fotavtryck – Vad är det och hur beräknas det*, Report 2007: 18, Gothenburg City: Environment department. Available at: <http://www.goteborg.se/wps/portal/miljo>. (Only in Swedish)

City of Malmö (2008) *Miljöredovisning för Malmö stad 2007*, Malmö City: Environment department. Available at: <http://www.malmo.se/miljohalsa>. (Only in Swedish)

Environmental Objectives Council (2008) *Sweden’s environmental objectives in brief*, brochure available at: <http://www.miljomal.nu/Environmental-Objectives-Portal>

European Environment Agency (2005) *Sustainable use and management of natural resources*, EEA Report No 9/2005. Available at: http://www.eea.europa.eu/publications/eea_report_2005_9

Global Footprint Network (2008) *The Ecological Footprint Atlas 2008*, Global Footprint Network: Research and standards department. Available at: <http://www.footprintnetwork.org/en/index.php/GFN>

Hornborg, A. McNeill, J. R. Martinez-Alier J. (eds.) (2007) *Rethinking environmental history: world-system history and global environmental change*, Lanham, Md.: Altamira, cop.

Marcotullio, P. McGranahan, G. (eds.) (2006) *Scaling urban environmental challenges: from local to global and back*, London: Earthscan.

Scania County Administrative Board (2007) *Miljötilståndet i Skåne – Årsrapport 2007*, No 2007:8. Available at: <http://www.lansstyrelsen.se/skane/Publikationer>. (Only in Swedish)

Steffen, W et al. (2004) *Global Change and the Earth System: A Planet under Pressure*, Berlin: Springer, cop.

Swedish Environmental Protection Agency (2008) *Konsumtionens klimatpåverkan*, Report 5903, Stockholm: Environmental Protection Agency. Available at: <http://www.naturvardsverket.se/sv/Nedre-meny/Webbokhandeln>. (Summary in English)

Vall, N. (2007) *Cities in decline? a comparative history of Malmö and Newcastle after 1945*, Malmö: Malmö University

WWF (2008) *Living Planet Report 2008*, WWF International. Available at: <http://www.panda.org/downloads>

Internet sources

eon.se. Information on the Öresundsverket:

<http://www.eon.se/templates/Eon2TextPage.aspx?id=60105&epslanguage=SV>. 03/05/09

malmo.se. Local statistics from the Strategic division at the City office: <http://www.malmo.se>. 27/04/09

unfpa.org. State of World Population 2007:

<http://www.unfpa.org/swp/2007/english/introduction.html>. 03/05/09