



GÖTEBORG UNIVERSITY
SCHOOL OF PUBLIC ADMINISTRATION

G-FORS Governance for Sustainability

National Case Study Report – Sweden

- SEA - Gothenburg
- PM10 – Gothenburg

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Foreword

This report has been accomplished within the EU-funded project *Governance for Sustainability*, (G-FORS). G-FORS is an FP6 funded project under Priority 7 - Citizens and Governance in a knowledge-based society. It runs until January 2009, and brings together 12 partners from 10 European countries.

The Swedish team originally started out with Prof. Dr. Henry Bäck as project leader, but after his retirement, Bäck was replaced by Prof. Dr. Folke Johansson. Initially, PhD Marcia Grimes also participated in the project, but she left the project after she recruiting PhD Birgitta Niklasson in January 2007 for the SEA case. Marcia also recruited PhD Ylva Norén Bretzer from October 2007 for the PM₁₀ case. Marcia has provided a great support throughout the work process, however. Thank you so much for helping us out with everything from financial queries to the interpretations of the conceptual framework of the G-FORS project. Marcia has also contributed significantly to the data collection on the PM₁₀ case.

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Finally, we direct our thankfulness to all the informants and interview respondents related to the two case studies. Without your assistance, and your patience in answering our questions, this report would never have been accomplished. We hope that you feel that we have made justice to your materials.

Gothenburg in February 2008,

Birgitta and Ylva

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Summary: the SEA Case

The Swedish SEA case is a study of the implementation of the EU-directive 2001/42/EC in Göteborg. The study is focusing on Göteborg municipality's strategic environmental assessment (SEA) of its comprehensive land use plan, ÖPXX.

There are several reasons why this particular case is suitable as a part of the GFORS-project. First, the SEA in Göteborg is not finished, but is still under development. This facilitates the collection of empirical data regarding reflexive knowledge, since reflexive knowledge is a fleeting phenomenon that does not usually last over an extended period of time. The case is also suitable because it may be considered a critical case.

The study employs process-tracing and builds on a number of different methodological approaches: document studies, interviews, and participating observation of relevant meetings. This combination of methods allows for an analysis of the governance mode and the degree to which reflexive knowledge has been generated throughout the process.

The results indicate that the Swedish SEA is developed mainly through a hierarchical governance mode, even though there are elements of networks and markets. There are signs of reflexive knowledge occurring, in the work process as well as in the SEA document. The accumulation of reflexive knowledge does not seem to be correlated with any specific governance mode, however.

To conclude, it is quite possible that the Swedish SEA promotes a sustainable development; it is largely comprehensive, well aggregated, and consistent. Also, there have not been any major legitimacy problems during the SEA process.

Summary: The Particulate Matter Case

The Air Quality Framework Directive from 1996 and the following updates has been implemented into the Swedish Environmental Code (SFS 1998:808) as well as the *Environmental Quality Norms, EQN* (prop. 2000/01:130 and prop. 2004/05:150) and the ordinance on Environmental Quality Norms on Outdoor Air (SFS 2001:527). The areas most affected by PM₁₀ emissions are the three largest cities Stockholm, Gothenburg and Malmö (in the order of size), and the efforts to control the PM matters have primarily been centered around the establishment around a *Measurement Program* in order to control and reduce the emissions.

As Stockholm was experimenting with a new system with car-congestion fees in 2006, we decided that it would be unwise to select this case for a closer study, as the Stockholm case was too interwoven into governmental bargaining politics, and regional future planning politics. Malmö was also less suitable for selection, as a great deal of its emissions originates from long-distance emissions. Gothenburg was more of an ideal-case, according to the national judicial description of the problem as well as the solutions.

PM₁₀ levels started to be measured in Gothenburg at the early 1990s, and soon it was realized that several places exceeded the EQNs. The National Environmental Protection Agency, *SEPA*, decided that a Measurement Program should be produced by the municipality of Göteborg. Such a program was deliberated and handed into the SEPA by June 2003, but it was rejected as several of the measures were not within the municipal mandate (such as a ban on studded tires and car-tolls). In 2006, the government demanded a new version of the Measurement Program, which finally was settled in May 2006. The *action arenas* are of a hierarchical multi-level character, where the Government acts through a) the Ministry of Environment, b) the SEPA, and c) the County Administration of Västra Götaland. The local level acts primarily through the municipality of Gothenburg, but in close collaboration with the neighboring municipalities and the County Administration. The *actors* involved have primarily been bureaucrats at various levels, and politicians to a lesser extent. Representatives for voluntary organizations have been close to totally absent, a few consultants have participated in the process, but primarily as deliverers of data rather than as policy makers. Even when the media discusses the PM emissions, they rather echo the decisions taken by the administrative authorities, rather than echoing any opinion movement. *Knowledge* does anyhow feed into the process through the bureaucrats at all levels; they pay attention to various types of reports produced in other municipalities as well as by national and international researchers.

Abbreviations

BRG	Business Region Göteborg Ltd.
EIA	Environmental Impact Assessment
EQN	Environmental Quality Norms
EQO	Environmental Quality Objective
CLUP	Comprehensive Land Use Plan
CPO	City Planning Office
DCLUP	the Department of Comprehensive Land Use Plan
GR	the Göteborg Region Association of Local Authorities
PBL	the Planning and Building Act
SEA	Strategic Environmental Assessment
SEPA	Swedish Environmental Protection Agency
ÖPXX	the CLUP that is under progress in Göteborg

Swedish Institutions and Laws

Swedish Name	English Name
Boverket	The National Board of Housing, Building and Planning
Byggnadsnämnden	The Building Committee
Fastighetskontoret	The Department of Housing and Accommodation Services
Göteborgsregionen	The Göteborg Region Association of Local Authorities
Landsting	Municipality Secondaire
Länsstyrelserna	The County Administrative Boards
Kommun	Municipality Premier
Kommunfullmäktige	The City Council
Kommunstyrelsen	The City Executive Board
Kretsloppsförvaltningen	The Department of Recycling Services
Naturvårdsverket	The Swedish Environmental Protection Agency
Miljöbalken	The Environmental Code
Miljöförvaltningen	The Department of Environmental Services
Miljömål	Environmental Quality Objectives
Miljömålsrådet	The Swedish Environmental Objectives Council
Park- och Naturförvaltningen	The Department of Park and Nature Services
Stadsdelskontoret	The City Planning Office
Stadsdelsnämnd	District Council
Trafikkontoret	The Traffic and Public Transport Authority
Översiktsplan	Comprehensive Land Use Plan

I. The Legal and Institutional Setting

1. GENERAL INSTITUTIONAL SETTING

Sweden is a unitary state¹, but with primarily two constitutionally founded administrative levels. The central state is constituted by the national parliament (Riksdag) and the government along with its ministries organized sector-wise (defense, social, agriculture, business, environment, education, etc)². In addition, in connection to the ministries, we find the state bureaucracy and agencies; as is found organized both along sector lines but also geographically. The state administration is represented in the 21 county administrative boards, *Länsstyrelserna*. These often have dual roles. They are supervising and scrutinizing the activities³ of the municipalities, but they are also acting as the common regional voice *vis avis* the government. In short, *Länsstyrelserna* are the “downward” guarantor that national policies become implemented in the various parts of the country, and they communicate policy problems, policy adjustments or wishes for further policy activities “upwards” to the central government.

The second constitutional level is the municipalities (*kommuner*), at present numbering to 290. They are run locally by elected politicians in the City Councils (*kommunfullmäktige*) and they also hold a certain independence from the central state. They collect their own taxes, for example. But, there is a bulk of nationally decided obligatory laws that the municipalities cannot avoid; these rules range from schooling, social care, the environmental code, to elderly- and childcare. The local municipalities can decide on *how* to implement these obligations, but they cannot decide to defect from them.

Something that complicates the picture further is that there are two types of municipalities, *primärkommuner* (*municipal premier*), which handles the mentioned issues, and *sekondärkommuner* (*municipal secondaire*), also called *Landsting*. These number to 20 and they follow the geographical boundaries of the state districts, *Län*. *Landsting* have healthcare services as their most important function. Just like the municipal premier, they are run by a politically elected assembly and they collect their own taxes, but they are organised separately from the primary municipalities, not above them. Therefore, Sweden is formally organized in two government layers.

¹ Its population totals to 9.1 million inhabitants, while its size is somewhat larger than Germany and slightly smaller than Spain (Germany is 357.000 km², Sweden is 450.000 km² and Spain is 505.000 km²).

² The specific organization of the Governmental departments vary from term to term; for an updated overview see the Swedish Government webb page.

³ Here primarily understood as national policy implementation.

1.1. Swedish Environmental Regulations in General

The first governmental agency dealing with environmental issues was founded back in 1967, when the Swedish Environmental Protection Agency, SEPA (Naturvårdsverket), was founded. The first law on Environmental Protection was launched in 1969, and throughout the 1970s and 80s followed a number of scattered laws, covering the planning and use of land, protection of various natural resources (chemical uses, health protection, damage protection), the conditions for certain resource uses (planning of roads, railways or airports) and under what conditions certain resources can be extracted (such as mining, water use, fishing and wild-life hunting) (Michanek & Zetterberg 2004).

By the early 1990s, the numbers of environmental laws had increased. Sometimes, they were contradictory and they were difficult to oversee. A governmental committee reviewed the situation and presented a proposal in 1994, arguing for the first coherent Environmental Code to promote sustainable development (SOU 1993:27; prop 1994/95:10). However, it was first rejected by the parliament. The new Environmental Code did not come into effect not until January 1999 (SFS 1998:808), replacing 15 older regulations and serving as an umbrella for acts regarding physical environment.⁴ The Environmental Code is one of the most important instruments in the environmental policies of the country and of the municipal environmental inspectors employed in every municipality. Also the county administrative boards play important roles when it comes to watch that the intention of the Environmental Code becomes realized in the local municipalities. Important instruments in the Code are monitoring of environmentally disturbing (human) activities, authorizing permits environmentally disturbing uses, and following up that given restrictions are respected.

As a member of the EU, Sweden has been obliged to adopt fixed environmental quality criteria regarding water and air quality. Thus, the Swedish parliament has adopted 16 Environmental Quality Objectives, EQOs (prop 1997/98:145; prop 2000/01:130; prop 2004/05:150). This process partly emerged in parallel to the development of the Environmental Code, but it has also emerged along a separate path. There was an urge for more focused national initiatives and goals by the end of the 1990s, after the various Agenda 21 initiatives that took place after the

⁴ All in all, there are more than 50 pieces of relevant legislation, a consequence of the high degree of sector orientation in Swedish planning and spatial development. The purposes, procedures, methods, and contents required by these acts vary depending on the sector concerned (Bjarnadóttir & Åkerskog 2003:131; Emmelin & Lerman 2004:7, 2006:136), something which causes confusing overlaps of terms and concepts (Emmelin & Lerman 2006:74-76). Some important regulations are still working in parallel with the Environmental Code, such as the Planning and Building Act (Plan- och Bygglagen, PBL, SFS 1987:10), which primarily concerns the regulation of public control of building in local and regional physical planning.

Rio-summit. The main reasons behind the development of the EQOs were (prop 2000/01:130, pp. 11-16):

- To emphasize the *ecological dimension* of sustainable development.
- To *define sector responsibilities* that various state agencies have with regards to these EQOs.
- To *enable monitoring and evaluating progresses* with regards to EQO achievement.

The 16 EQOs comprise of 72 interim targets. These targets specify the direction of everyday environmental work and offer a time perspective, for example by describing what the environmental situation should be in a given year, usually in 2010 (the Environmental Objectives Portal). The ambition is that these goals should influence all decisions regarding community planning made by public actors. However, the environmental objectives are not binding; they are merely guidelines, even though they are easily perceived as binding because of how they are worded (Emmelin & Lerman 2006:87, 92, 116).

Apart from the EQOs, there are also regional and local specific environmental objectives formulated by the county administrative boards and the municipalities (Emmelin & Lerman 2006:112). The county administrative boards have the responsibility for following up and evaluating the EQOs. This information is reported to the Nation Environmental Protection Agency and to the Swedish Environmental Objectives Council (Miljömålsrådet), who coordinate the evaluations from different parts of the country (the Environmental Objectives Portal).

Problems that have been reported from the regional EQO processes regard difficulties in finding valid data and robust indicators that are working across the country. Also, since the state has not devoted any further resources for the municipalities for EQO work, they have few incentives to be of assistance in the process. A national evaluation report from 2007 states that eight out of the 16 EQOs are estimated difficult to reach within the laid out time-frame (the SEPA webb page). One of the difficult objectives to meet is fresh air, including also particulate matters (PM₁₀ objective set to 2010). However, several municipalities have also been successful in integrating the EQO into the local land use planning processes.

Swedish legislature also includes Environmental Quality Norms, EQN. These norms state the lowest acceptable quality level for different environmental aspects, for example air and water (Emmelin 2006:116-120).

<p>EQO according to prop 2000/01:130: PM₁₀ levels should not exceed 30 µg/m³ per 24-hrs average, and 15 µg/m³ per yearly average.</p> <p>EQO according to prop 2004/05:150: PM₁₀ levels should not exceed 35 µg/m³ per 24-hrs average, and 20 µg/m³ per yearly average, until the year 2010. PM_{2.5} levels should not exceed 20 µg/m³ per 24-hrs average, and 12 µg/m³ per yearly average, until the year 2015.</p>

1.2. Legal Frameworks for SEAs

The implementation of the SEA Directive (2001/42/EC)⁵ in Sweden can be described as minimalist. Two indications of this minimalist approach are: 1) the decision to incorporate the Directive by making amendments to previous laws rather than creating new ones and 2) the hasty process preceding the transposition.

There are mainly two different strategies used by Member States when transposing the content of the SEA Directive into national law. One is to enact a special SEA act. The other is to make amendments to the EIA law or to special planning law (Knopp & Albrecht 2005:66). Sweden chose the second of these two alternatives. Thus, the SEA Directive was incorporated mainly through changes in two key parts of the legislation: the Environmental Code (SFS 1998:808) and the Planning and Building Act (SFS 1987:10; Naturvårdsverket 2005:1; Boverket 2006:37).

The decision to make changes to pre-existing pieces of legislation rather than creating a new act is something that the Swedish researchers Lars Emmelin and Peggy Lerman (2005:185-186) argue indicates a minimalist approach towards the Directive, as the Directive is incorporated into the national context with a minimum of disruption of already existing laws. Instead of focusing on the effectiveness of the new law, the point of departure has been to check off central formal criteria in the Directive and to leave out the rest, which might have led to an implementation that does not actually meet the minimum requirements of the Directive.

One reason for this approach may have been that there was not enough time to make more fundamental changes of the law system before the transposition was supposed to be completed in July 2004 (Emmelin & Lerman 2005:187). The preparations preceding the implementation of the SEA Directive in Sweden were mainly carried out within the framework of two working groups: one parliamentary committee that was revising the PBL with regard to its co-ordination with the Environmental Code and one reference group consisting of experts from relevant professional categories appointed to supervise the Swedish transposition process (Bjarnardóttir & Åkerskog 2003:123-124).

According to Emmelin and Lerman, however, this Swedish transposition process was concluded in “great haste” (Emmelin & Lerman 2005:181), the process only being initiated one year after the Directive was passed in July 2001. There was, e.g., not enough time to produce any guidelines that could facilitate the implementation of the new rules (Bjarnardóttir & Åkerskog 2003:124; Emmelin & Lerman 2005:187). Such guidelines were formulated later, though, by the SEPA

⁵ In this report, I will also refer to this directive simply as “the Directive”, or “the EU Directive”.

(Naturvårdsverket 2006) and the National Board of Housing, Building and Planning (Boverket 2006).

1.2.1. Comprehensive Land Use Plans and SEAs

The Swedish planning system comprises sector plans and municipal spatial plans (Emmelin & Lerman 2005:179). The municipality constitutes the only statutory planning level and carries the primary responsibility for the physical planning of land and water use within its area (Bjarnardóttir & Åkerskog 2003:131). Hence, Sweden is one of the few EU countries that lack a regional spatial planning level (Emmelin & Lerman 2005:180).

Every municipality is required to produce an updated comprehensive land use plan (CLUP)⁶ in accordance with the rules in the PBL (Boverket 2006:37, 43). This plan should display how the whole area is divided between different sector interests, such as nature, cultural heritage, tourism, and roads. It should also offer recommendations of how these different interests may be taken into account in future planning (Emmelin & Lerman 2005:180). These suggestions are not binding, however, and a CLUP and the SEA related to it can, therefore, only be appealed against based on procedural objections, not on their actual content (Boverket 2006:47).

Initially, it was unclear whether CLUPs would require SEAs at all, but the National Board of Housing, Building and Planning published guidelines in 2006, which state that CLUPs shall always be subjected to an SEA. The idea is that CLUPs guide decisions on future plans and projects and can, therefore, be assumed to be of at least indirect environmental importance. This general rule applies even to developments or changes of such a plan (Boverket 2006:15-17). It is the responsibility of the municipality to ensure that the quality of the SEA is satisfactory (Boverket 2006:11), but the implementation process varies greatly from case to case (Bjarnardóttir & Åkerskog 2003:147).

1.3. Legal framework for Particulate matters

“In *The Great Smog* of December 1952, over 4,000 persons died due to exceptional cold weather, when people burned extraordinary amounts of coal, in order to keep warm. The inversion trapped many inhabitants in the thick air pollution, made worse by low-quality high-sulphur coal. The particles easily went indoors and concerts and screening of films had to be cancelled. After those dramatic experiences followed a number of regulations, such as the Clean Air Acts of 1956 and 1968.”⁷

⁶ Terms like “CLUP”, “comprehensive land use plan”, and “plan” are used to refer to the same thing in this report.

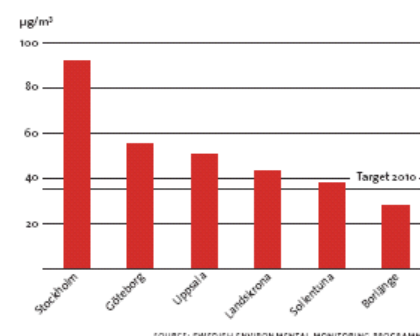
⁷ Excerpts from a document on “*The Great Smog of 1952*”, at the The Met Office in UK, <http://www.metoffice.gov.uk/education/secondary/students/smog.html>

We have all seen the pictures from Charles Dickens' London in the late 19th century; fumes and smog pouring out from coal-burning chimneys all over. In fact, when I visited Dublin in early 1990s, horses were still seen around, delivering buckets of coal at the doorsteps of families homes. Across the decades, the awareness of the hazardousness of air pollution has risen, and the EC has taken important steps in order to regulate these emissions.

1.3.1. Background

The European Union adopted the first Air Quality Framework Directive in 1996, and thereafter several updates has been made (EU Air Quality Framework Directive 96/62/EC; Directive 1999/30 EC; Directive 2000/69 EC, changed by Commission decision 2001/744/EC; Directive 2002/3 EC; Directive 2004/107 EC).⁸ PM standards under EC directives have actually been into force since April 1983, and the first WHO guidelines appeared as early as in 1987.⁹

An awareness of the importance to restrict particulate matters also became evident in Sweden during the 1990s¹⁰, as well as the insights that air pollution causes thousands of too early deaths. The awareness of the problem of PM₁₀ particles did not seem to emerge in the Swedish discourse until the beginning of the 1990s, earlier awareness was primarily focused on SO₂, CO and NO_x. The more recent attention to particulate matters also parallels the understanding for problems due to volatile organic compounds (sv. *kolväten*, VOCs) and ground-level ozone effects.¹¹ Epidemiological studies points out that air pollution of all kinds affects human health, even among children and non-smokers.¹² This report will continue to discuss PM₁₀ particles, bearing in mind that these also contains *ultra fine* particles, PM_{2,5} and PM_{0,1}, where the smaller particles are the more hazardous to human health. But the EC regulations, and this research project, are at the moment concentrating on regulating the PM₁₀ matters. However, the ultra fine particles partially constitutes the amount of PM₁₀ particles, it is for example



SOURCE: SWEDISH ENVIRONMENTAL MONITORING PROGRAMME
The interim target for particles (PM₁₀), expressed as a daily mean, is exceeded at roadside sites in many of Sweden's towns and cities. Abrasion of road surfaces by studded snow tyres is an important factor behind the high levels recorded.

Figure 1.1 Particles (PM₁₀) in urban air in 2005 (daily mean concentrations at roadside sites).

⁸ For an overview, see G-FORS working paper *Governance on Particulate Matter* by Fahrner, Sonja (2006).

⁹ www.euro.who.int/air/activities/20050222_2 PM standards under EC directives have been into force since 1 April 1983. (Case 361-88, Commission vs Germany) ECR I-02567.

¹⁰ See for example *Miljöhälsoutredningen* SOU 1996:124; SEPA report 4761 (1997).

¹¹ Even more recent is the awareness of the problems due to *Benzo[a]pyrene*. A quality standard is not yet taken.

¹² Miljöhälsorapport 2001 and 2005 (Socialstyrelsen, Institutet för miljömedicin, Miljömedicin Stockholms läns landsting). IVL estimates that some 5.000 Swedes dies too early every year due to air pollution (IVL report B1667).

estimated that in Stockholm, 70 per cent of the PM₁₀ matters are in fact PM_{2,5} particles (Miljöhälsorapport 2001:28).

Regular measuring of air-born particles has taken place since the 1970s, but PM₁₀ and 2,5-particles were not systematically measured until the early 1990s.¹³ The primary sources of the particles are long-distance transports, stirring of road dust and to a lesser extent pollution from traffic exhausts and heating (SEPA report 5318).¹⁴ The emission levels also vary across the yearly cycle, being more prominent after snow-melting but when winter tires still are on the vehicles (March/April). Also, if the weather season becomes very dry, particle concentrations will rise.

The Swedish Environmental Protection Agency (SEPA) has the national responsibility to monitor the air qualities, and the private company *IVL Svenska miljöinstitutet AB* has the actual measuring responsibility on a continual basis. Consultations on these matters occur on a regular basis with *Institute of Environmental Medicine, Konjunkturinstitutet* and *The National Board of Health and Welfare (Socialstyrelsen)*.

1.3.2. The legal framework for PM₁₀ in Sweden (available rules)

In the Environmental code (1998:808), chapter 5 states that the government can issue certain quality regulations for geographical areas of the country, or the country as a whole. These are applicable for land, water, air or other environmental aspects. The government can delegate the responsibility to another governmental agency to communicate the Environmental Quality Norms following the membership of the EC (§ 1). The Environmental Quality Norms must be met when state authorities release permissions to use land, water or air in ways that will effect the overall environment (§ 3). If it is needed, in order to meet the Environmental Quality norms, a Measurement Program shall be set up by the government, or those bodies that the government decides (§ 4, SFS 2003:808). It shall be decided by the government, or the body (alt. bodies) that the government decides. A Measurement Program should contain a) the Environmental Quality Norm that shall be met, b) what measures authorities or municipalites have to take, in order to meet the Environmental Quality Norm, and c) an analysis of the consequences from the taken measures for the public and society in general (§ 6).

There are technical problems with implementing the Environmental Quality Norms (EQNs), especially when the polluting sources are plentiful and clear targets (actors) are difficult to find (such as the case with traffic). The law also lacks a clear sanction; nothing really happens when the Quality Norm is exceeded (Michanek & Zetterberg 2004: 167). Though, the Quality Norm is easier to apply when it comes to

Box 1.2 Environmental Code, chapter 5:

1 § The Government can for certain geographical areas, or for all the country, communicate restrictions on the quality norms for land, water, air or the environment generally, if it is needed in order to protect human health or the environment or to reduce damages on human health or the environment (environmental quality norms, EQNs).

The Government can delegate to a state authority to communicate EQNs which follows from Sweden's membership in the European Union.

¹³ In Gothenburg, particle measurement in *urban background* has been measured since 1990.

¹⁴ In some parts of the country is burning of wood the major source of particle emissions.

clear cases of issuing permissions, conditions of use or in the planning of exploitation of various kinds. It is harder to use the Environmental Quality Norms to hinder activities that were present already before the Norm; but when new projects are coming up, such as the building of a new high-way, the Environmental Quality Norm can have a restrictive power on certain alternatives (no new roads where EQN already are exceeded).¹⁵

In 2001, also the regulative ordinance on Environmental Quality Norms on Outdoor Air (*förordning om miljö kvalitetsnormer för utomhusluft*) was taken (2001:527), covering the wide range of air emissions mentioned earlier. What is noticeable is that the accepted emission limits differs between the 2001 and 2005 government proposals and the regulative ordinance referred to here, which still is under implementation. Therefore, it is fair to say that there's confusion already on the regulative level on which limits should be aimed at (see boxes 1.1 and 1.3). The regulative ordinance on Environmental Quality Norms on Outdoor Air covers urban areas with 250.000 inhabitants or larger¹⁶, or such areas where "it is motivated to evaluate and secure the air quality." (3 §) Each municipality has the duty to control that the environmental quality norms are respected and the monitoring can be carried out in collaboration with several municipalities. "Control must be carried out through measurements, estimations or other objective evaluation." (10 §). The national agency SEPA can be responsible for closer regulations on measurement methods, estimation models, evaluation methods, issuing of measuring results and approval of measurement equipment.¹⁷ If a municipality after controls finds emission levels exceeding the environmental quality norms, they should immediately communicate with SEPA and relevant regional state authority (*länsstyrelse*) (14 §). After communication through § 14, the SEPA should investigate the need for a *Measurement Program*. If SEPA finds it appropriate, they shall suggest a proposal for Measurement Program to the Government (department of Environment), who then take decision on the Measurement Program, or delegates to a lower authority to do so. All

Box 1.3 Particles, PM 10 (ordinance on Environmental Quality Norms on Outdoor Air)

9 § In order to protect human health, particles should not be allowed in outdoor air after December 31st, 2004, more than

1. in average 50 µg per m² air during 24 hour-average, and
2. an average of 40 µg per m² air during a year (yearly average).

The value in the 1st paragraph can be exceeded 35 times per calendar year (90-percentil).

Box 1.4 Deciding on the Measurement Program, Environmental Code, 5 chapter: 5 §

A Measurement Program must be decided by the Government or the authority or municipality that the government decides. If needed, the government can decide that the Measurement Program must be approved by several authorities or municipalities. A Measurement Program that is taken by a municipality must be taken by the municipal council (*kommunfullmäktige*). The Measurement Program shall be sent to the authorities that the Government decides. With municipality is in this paragraph also intended municipal collaboration (*kommunalförbund*). (SFS 2003:808).

¹⁵ A number of other laws also refer to the EQNs, such as Law on Planning and Building, the Road Law, the Law on building of Railways.

¹⁶ Today, measurements are carried out in some 50 municipalities with urban background. Only three cities pass the criteria of <250.000 inhabitants; Stockholm, Göteborg and Malmö. Other sites for measurements are primarily suburbs and towns with a high local population density but 10.000<inhabitants<250.000.

¹⁷ SEPA recommendations on control of out-door air was issued in NFS 2007:7.

actors affected by a Measurement Program should be given the opportunity to react or comment such a proposal during at least two months. After consultation (sv. *samråd*), a conclusive report should be added to the final document, where all various opinions can be detected (Environmental Code chapter 5, 4 §). There are also some guidance in the Environmental Code on what a Measurement Program should contain; a) it should state the EQN that shall be met, b) it should state the specific measures taken by agencies or municipalities in order to meet the EQN, as well as *when* this is supposed to take place, and c) it should contain whatever additional information the EC may require. A Measurement Program should be renegotiated at least every sixth year. (Environmental Code 5:6§).

The municipalities are obliged to inform the citizens about the updated emission concentrations through internet or media. The information should always include a) exceeding above the environmental quality norm, b) the municipal evaluation about the exceeding, and c) possible consequences for people's health. (17 §) The *formal* process around the *Measurement Program* will be of interest for us further on in this report, as well as the informal processes relating to it.

1.3.3. Summary

The EC regulations on particular matters have been implemented into the Swedish judicial framework, primarily through the Environmental Code and the regulative ordinance on environmental quality norms on outdoor air (SFS 1998:808 and SFS 2001:527). Also the Environmental Quality Objectives refer to the same judicial framework, but with less regulative power and with conflicting information concerning the validity of the quality criteria.

II. Case Study on SEA

1. CONTEXT AND CONDITIONS

1.1. Case Background

The CLUP under progress in Göteborg goes under the working name ÖPXX. It was initiated in 2005 and it is scheduled for adoption in 2009. It is the fourth of its kind. Previous CLUPs were carried out in 1989, 1993, and 1999, but these were very different in character. They were much less ambitious than ÖPXX to start with, being mainly descriptions of how the city was developing rather than strategic plans for future development. Also, since they were produced before the SEA Directive, they were not accompanied by environmental assessment reports of SEA standard (interview with civil servant 4).¹⁸

Considering the time required for the development of previous CLUPs, the time frame for ÖPXX appears a bit tight. One plausible explanation is that the politicians are anxious to pass the new plan before the next election in 2010. If possible, they want to avoid that potentially controversial matters in the plan become a part of the political struggle for votes. The previous CLUP was, e.g., appealed against by a civilian and could not be adopted until 2001 instead of 1999, as intended. Its name was, therefore, changed from ÖP99 to ÖP01, which is the reason why the present CLUP has been given the tentative title ÖPXX.

The need of an SEA was not obvious to the people involved in the ÖPXX process at first. Civil servant 1 said during an informal conversation that the assessment they had just started working on was not an SEA, but an EIA. An SEA is not necessary, he explained, since the CLUP is an update of a previous plan (ÖP01) and not an entirely new plan. He concluded, incorrectly, that he was free to put together an environmental assessment according to his own preference using any method he liked. This is particularly surprising considering that the commission from the politicians explicitly called for an SEA (see II.3.2).

1.1.1. Main Features of the CLUP

There are 13 strategic issues that constitute the framework of the CLUP: 1) Göteborg as the centre of a growing region, 2) access to housing, 3) a changing trade market, 4) Göteborg as a bustling business centre, 5) Göteborg as the logistic centre of the North, 6) increased transportation needs, 7) environment and culture as means of creating an attractive city, 8) access to the coastline, 9) pluralism, safety, and huma-

¹⁸ All local projects, however, have been subjected to environmental assessments of some kind in Göteborg since the beginning of the 1990's, even before EIAs became a requirement (interview with civil servant 1).

nism, 10) recreation and health as means of increasing life quality, 11) a robust society, 12) industrial locations, and 13) sustainable development in a long term perspective.

How these strategic issues are taken into account in the CLUP is directed by eight basic principles: 1) build in centrally situated areas, 2) develop the aspects that characterise Göteborg, 3) complement and mix different kinds of environments, 4) make public transport more competitive, 5) focus on nodes, 6) improved communications across the harbour, 7) sufficient space for the harbour and industries, and 8) reserve the periphery for future needs.

These strategic issues and principles show that the CLUP has a long term perspective and that it affects a larger area than just Göteborg municipality.

1.1.2. Main Attributes of the Community

The strategic issues and principles listed above are highly influenced by Göteborg's geographic conditions and its population. Göteborg is the second largest city in Sweden (481.000 inhabitants) and the largest city in the region. It is situated close to the sea, the building density in city centre is low, there is a growing demand for housing, and there are several big and important industries in the area, like Volvo, Ericsson, and Astra.¹⁹

1.1.3. Available Rules²⁰

See section I and II.3.

1.2. The Role of the Media

The ÖPXX has attracted greater media attention than any other CLUP in Göteborg. Between 2006 and 2008, there have been at least 22 news articles, editorials, and opinion pieces concerning the plan published in local newspapers. The news articles frequently end with an encouragement to the readers to take the opportunity to comment on the plan, either directly to the City Planning Office (CPO), or to the newspaper. E-mails, phone calls, and letters have been welcomed. On top of this, the local authorities have posted several ads inviting the public to information meetings and political discussions related to the plan.

¹⁹ For more information about Göteborg, see the home page of Göteborg City.

²⁰ For further information of available rules, see section I.

2. THE ACTION ARENA

There are three contextual factors that affect the structure of an action arena (Ostrom 1999:42-43): the physical and material conditions, the attributes of the community, and the rules used by participants to order their interactions. The Swedish SEA case comprises three action arenas: 1) the political arena, 2) the bureaucratic arena, and 3) the public arena. These action arenas do not differ with regard to their physical and material conditions or in the attributes of the community (see II.1), since they all take place in a Göteborg context. The rules in use, however, are not the same (see II.3.2).

There are also different rules in use within the action arenas. The three action arenas have, therefore, been divided into 10 sub-action arenas, or action situations (Ostrom et al 1994; 1999:43, 52-53).

Table II.1. The Swedish SEA Action Arena

The Political Arena	The Bureaucratic Arena	The Public Arena
<i>AS1</i> : Decision to start the CLUP process	<i>AS4</i> : Writing of the CLUP	<i>AS8</i> : Media debates about the CLUP
<i>AS2</i> : Discussions on drafts of the CLUP	<i>AS5</i> : The SEA on social aspects	<i>AS9</i> : Public information and discussions about the CLUP
<i>AS3</i> : Adoption of the CLUP	<i>AS6</i> : The SEA on ecological aspects	<i>AS10</i> : Written comments to the CLUP
	<i>AS7</i> : The SEA on economic aspects	

Comment: AS = Action Situation.

Action arenas and action situations are conceptual units of analysis (Ostrom 1999:42). The action situations identified here are, therefore, closely tied to the purpose of this particular study. The development of the SEA has, e.g., been divided into three separate action situations, even though the SEA only constitutes a small part of the whole CLUP process. This emphasis on the SEA process is motivated by the fact that this is the process of main interest in the GFORS research project. The CLUP process in general is just a background setting. In reality, however, it is often hard to separate the two processes from one another. I will, therefore, often refer to the CLUP process in the analyses and not just to the SEA process. In those cases, the SEA process has constituted an integrated part of the CLUP process.

Also, not all action situations mentioned above will be analysed in this report. The media action situation, e.g., is not SEA relevant; the media debates concern other CLUP matters. The adoption of the CLUP will not be included either. Not because it lacks relevance, but because it has not yet taken place.

2.1. Involved Actors: Holders – Their Resources and Roles

There are seven different kinds of actors according to Heinelt et al (2006:22): right holders, spatial holders, shareholders, stakeholders, interest holders, status holders, and knowledge holders. All seven kinds of holders have been active in the Swedish SEA case, although they have not played the same roles on all action arenas.

2.1.1. Actors on the Political Action Arena

On the political action arena, the most important actors are status holders, actors who are recognised representatives for different social, economic or political categories. The status holders are, in this case, politicians. They represent their parties as well as their voters. The ruling parties in Göteborg are the Social Democrats and the Greens, frequently supported by the Left Party. The Social Democrats are the dominating party in this coalition. It has governed Göteborg for many years. In fact, some people even say that Göteborg is ruled by one single person: Göran Johansson, the chair of the Social Democrats. The opposition (the Moderate Party, the Liberals, the Christian Democrats, the Centre Party, and the Nationalists), on the other hand, do not enjoy the same level of influence.

Other important actors on this action arena are the knowledge holders, embodied by the civil servants. The civil servants involved in the CLUP process on the political action arena are primarily the ones from the CPO. These are described further below.

The political action arena also includes spatial holders and stake holders. These are personified by the local party members. The party organisations of the Social Democrats and the Left Party, e.g., are divided into local sub-groups that are based upon city areas. In these sub-groups, a particular interest has been paid to the parts of the CLUP that affect the particular area where the members live (spatial holders), but they have also taken a more general interest in the plan (stake holders).

Ideally, there should also be right holders and interest holders on the political action arena. It is, e.g., important that politicians discuss the CLUP with citizens and interest organisations as well as their own party members. These kinds of interactions have been fairly limited, however. No politician interviewed for this study has been approached by any voter about the plan. A few citizens did attend the District Council meetings regarding the plan, though, so right holders have not been entirely absent from the process. Interest holders, on the other hand, do not seem to have been involved.

2.1.2 Actors on the Bureaucratic Action Arena

The CPO is situated in the very heart of Göteborg, right behind the City Square, where the City Council assembles. This physical location mirrors the central position that the CPO plays in the SEA of this study. One department is of particular

importance: the Department of Comprehensive Land Use Planning (DCLUP), which holds a staff of 11 people mainly architects and civil engineers, but also landscape architects, social scientists, and business scholars.²¹ These are the most important knowledge holders on the bureaucratic action arena.

Many of employees are relatively new, due to the generation shift caused by the retirement of the people born in the 1940's. Consequently, there are quite a few of the civil servants at the DCLUP who have little previous experience of producing an SEA. Those who are more experienced (the department head, and civil servants 1, 2, and 4) thus enjoy a higher status as knowledge holders than the others. Interestingly enough, neither of the two project leaders belongs to this group. They are both relatively young women who have a lot of knowledge of the issues concerned in the plan, but who have not been employed for a very long time at the DCLUP.

Five civil servants play a particular role in the SEA process (civil servants 1-5). Civil servant 1 is in charge of the social and environmental aspects of the SEA. He has an extensive experience from EIA processes and has also participated in the development of three previous CLUPs. The responsibility for the economic part of the SEA is shared between civil servants 2 and 3, the only two people on the staff with a business education.

There are also other knowledge holders on the bureaucratic action arena. These are experts invited by the DCLUP. These knowledge holders only constitute a handful of individuals and they are all researchers from the two local universities: Göteborg University (sociologists) and Chalmers University of Technology (architects). Their role in the CLUP process is fairly limited, though. Some of them participated already in the writing of early drafts of the plan, but most of them were only called in at a later stage in order to supply comments on the proposed CLUP.

Instead, there are other kinds of experts that play a much more important role on the bureaucratic action arena. Status holders, is a more accurate description of these experts, however. They are representatives of other parts of the local administration. The most important ones are those from the technical departments: the Dep. of Housing and Accommodation Services, the Dep. of Environmental Services, the Dep. of Recycling Services, the Dep. of Park and Nature Services, and the Traffic and Public Transport Authority. Coordination between these five departments and the CPO is becoming more and more formalised. For the CLUP, regular meetings have been held in "the reference group", in which all these departments have been represented. This group has also included representatives from Business Region Göteborg, BRG (see II.3.3).

²¹ Eight of these civil servants have been interviewed. The interview list can be found in Appendix 1. In order to protect the employee's identity, I will not always specify which of the interviewees has supplied the information.

There are no other kinds of actors on the bureaucratic action arena. It is the most closed one of the three action arenas analysed.

2.1.3. Actors on the Public Action Arena

The most open action arena when it comes to the range of actors is the public action arena. All kinds of holders are active on this arena. The civil servants still play a central part, though. They are knowledge holders; they are the experts who inform the public about the plan, but they are also status holders, since they represent the local administration towards the citizens.

The citizens – the right holders – are involved on this action arena in several different ways. First, they attend the public information meetings. About 250 people came to the four public meetings arranged by the civil servants from the DCLUP. In general, these meetings were dominated by people in their 50's and older. Retired people were, e.g., overrepresented. To one of the meetings, students specialising on environmental technology at Rudebeck Upper Secondary School showed up, but they stood out from the rest of the crowd.

The social composition of the public meetings varied somewhat depending on the areas in which the meetings were held. In the south-western part, the area closest to the coast where there are posh residential districts, the right holders have a higher education in general and are more verbal. The civil servants admit, e.g., that they prepare themselves much more carefully when going to the south-west, since they expect tougher and more critical questions from the audience there.

Something that did not seem to vary much regardless of the area, though, was the number of immigrants attending the meetings; there seemed to be very few people with an immigrant background at all meetings. This observation is made purely based on people's looks and accents, however, so it should be taken with a grain of salt. Still, it was somewhat surprising that even in the suburbs characterised by a high density of immigrants, there were few participants who appeared to have a foreign background.

It is also important to keep in mind that the people coming to these sorts of information meetings are not representative to the population at large in other respects either. Most people are not interested in spending several hours of their free time on this issue. Consequently, those who do attend are normally not just right holders; they are also spatial holders and stake holders.

On the public action arena, there is also a possibility for people and organisations to submit written comments to the CPO regarding the plan. This is where other kinds of actors, like interest holders and share holders, become involved in the process. All in all, 210 statements were made by 39 interest organisations (interest holders), political parties, 98 individuals, 21 local districts, neighbouring municipalities, a number of national and local administrative bodies, and private

businesses, e.g. housing companies (share holders). Some of them had been encouraged to respond by the DCLUP, but many wrote on their own initiative.

2.2. Absent Actors

There is no kind of holder that has been excluded from the SEA process entirely, but it is still relevant to speak of actors that have not been thoroughly represented. The civil servants at the DCLUP regret, e.g., that they did not have enough time to include immigrants, kids, the handicapped, businesses, and interest organisations to a greater extent at an earlier stage of the SEA process.

2.3. Observed Modes of Interaction

There are five different variables that are relevant with regard to actors (Ostrom 1999:42; Heinelt et al 2006:22-25): 1) the resources that an actor brings to a situation, 2) the preference evaluation actors assign to potential actions and outcomes, 3) the way actors acquire, process, retain, and use knowledge contingencies and information, 4) the process actors use for selection of particular courses of action, and 5) the action orientation actors follow. In this section, I will describe these actor attributes of the most central actors the Göteborg SEA case: the civil servants at the DCLUP. The question to be answered is whether the interactions between these actors and others are mainly characterised by hierarchies, networks, or markets. These different interaction modes are also called governance modes.

2.3.1. Civil Servants' Attributes and Observed Modes of Interaction

The preference evaluations of the civil servants at the DCLUP relies on that of their superiors (hierarchical governance mode), who are politicians and other civil servants. Their preference evaluations are also developed in discussions at the DCLUP, with civil servants at other local departments, and with experts (network governance mode). In the economic SEA action situation, however, the civil servants' preference evaluations are profit maximising (market governance mode), as they hire the consultant firm that answers the most favourably to their call for tenders.

The knowledge and information acquired by the civil servants depend on their formal position to some degree (hierarchical governance mode). The head of the department, meets more frequently with the leading politicians on the Building Committee. Thus, she has a more thorough knowledge of how the politicians think about the CLUP than the rest of the staff, but the dominating mode of interaction is that the employees at the DCLUP make collective decisions on how to collect and process information for the plan (network governance mode). It is only in the economic SEA action situation that they decide to buy information provided by a consultant firm (market governance mode).

The selection criteria that the civil servants use when settling on how to write the SEA is primarily decided by their formal position as implementers of political decisions (hierarchical governance mode). Regardless of what they think themselves, they will always settle for the version that they believe is acceptable to the politicians. At the same time, they try to combine the interests of several different branches of the local administration. The civil servants at the DCLUP pay a lot of consideration to the comments made by representatives from other local administrations and they are keen on including these comments into the SEA. It seems important that as many parts of the local administration as possible feel that they have participated, which is a network mode of interaction. Comments from citizens are also taken into account, but this is done on a much later stage in the CLUP process when their effect on the final plan is fairly limited.

The resources that the civil servants bring to the action arenas are limited by their position (hierarchical governance mode). The two project leaders of the CLUP control more resources than the other people in the group. They can, e.g., assign tasks to the others; they are in charge of the work force. Since most decisions are reached through a common understanding within the group, however, expert knowledge and good arguments constitute important resources (network governance mode). In the economic SEA action situation, the DCLUP also offers money to the consultants who provide the information needed. The information is in this case the private property of the consultants, which makes this mode of interaction market oriented.

The action orientation of the civil servants is problem solving (network governance mode). They have been assigned the task of updating the previous CLUP. The issues that they need to address have been stated as well as the basic principles that they shall apply when doing so, but it is the civil servants' task to figure out exactly how this can be accomplished.

To sum up, the attributes of the civil servants imply that the interaction mode in the Göteborg SEA case is mainly hierarchical and network oriented. There are some instances of a market governance mode, but these are limited to the economic SEA action situation.

2.4. Discourses

There are several discourses that run across the three action arenas. The most interesting of them is the one about the environment problems that the municipality faces. Potential consequences of climate changes, e.g. rising water levels, are particularly focused upon, since Göteborg is situated right on the sea. To what extent will such a development affect the plans to build more along the harbour and along the streams running through the city? None of the civil servants doubt that this is an important question to take into account in the SEA. This quote illustrates that they

share certain central values that make it relatively easy to agree on what problems need to be discussed and what are the possible solutions to these problems:

Here, there's nobody walking around saying that: "I don't believe in it [the climate change]. /.../ Everybody thinks that public transport really isn't taken enough into account in [political] decisions. /.../ That is to say, there is a shared professional way of relating to these issues (interview with civil servant 2).

3. IDENTIFYING GOVERNANCE MODES

3.1. Governance Modes

Governance modes on an action arena can be determined by the attributes of the actors, as we have seen in the previous section. However, they can also be determined by the rules in use (Ostrom 1999:50).

There are seven different kinds of rules: boundary rules, positions rules, scope rules, authority rules, aggregation rules, information rules, and payoff rules. In the following section, I will describe what rules have been in use on the different action arenas in the Swedish SEA case. Special attention will be paid to the rules used in the three SEA action situations on the bureaucratic action arena. The aim is to identify what governance modes (hierarchies, networks, or markets) dominate the SEA process.

3.2. Rules in Use on the Political Action Arena

The position rules on the political action arena are the members of the City Council, members of the City Executive Board, members of the Building Committee, local party members, civil servants from CPO, and citizens. In this section, I will focus on the rules in use for the political positions, since they are the most central ones on this action arena. The civil servants and the citizens will be analysed in the sections below.

The members of the City Council are elected every fourth year (boundary rules). A party's success in the election decides how many seats that party is entitled to in the City Council as well as on the City Executive Board and on the Building Committee. Exactly who will represent a party in the two latter institutions is not settled in the election, however. The representatives to the City Executive Board are chosen from within the City Council after the election. Usually, the most prominent politicians from the parties are picked. The politicians on the Building Committee do

not need to be elected City Council members at all; the parties are free to choose whoever they want.

According to the authority rules, the City Council decided that the CLUP from 2001 should be updated. The responsibility for the practical work was delegated to the City Executive Board, who passed a petition to the Building Committee. Petitions from the City Executive Board are not automatically binding, however. The City Executive Board does not have the authority to order the Building Committee to do anything; they can only ask, since these two institutions formally exist on the same level in the political hierarchy. Since all municipalities are obligated to update their CLUPs during every term of office, it would not have been possible for the Building Committee to ignore the request from the City Executive Board entirely, but they had the authority to modify the suggested scope of the CLUP.

Five points were specified in the petition made by the City Executive Board (scope rules): 1) the CLUP should have the character of an update rather than an entirely new plan, 2) achieving sustainable development should be the goal of the plan, 3) the plan should follow the new EU-directive regarding SEAs, 4) the plan should focus on strategic issues concerning land use, traffic, and regional matters, and 5) the plan should include an update of the local plans for different districts. The Building Committee was sceptical to the last point, but it was not removed (interview with politician 3. See II.6.2.1).

How the five requirements should be achieved in practise was settled through discussions between the president and the vice president of the Building Committee, and the directors of the CPO and the DCLUP (aggregation rules). They decided on the issues, goals, principles, and strategies of the plan (scope rules. See II.1.).

Once the civil servants at the CPO have the mandate to propose an updated version of the previous CLUP and the scope of this update is settled, political interference is minimal (aggregation rules). The head of the DCLUP is still obliged to keep the executive board of the CPO and the Building Committee informed of how the work is progressing (information rules). The civil servants at the DCLUP arrange, e.g., thematic group discussions with the politicians on the Building Committee. These discussions focus on issues of particular importance in the plan that the civil servants want more political feed-back on. These meetings are also a way for the civil servants to ensure that there is a political majority in favour of the strategic decisions made in the plan, since the plan will have to be passed through a vote in the City Council (aggregation rules).

The incentives for the politicians to update the CLUP are mainly to comply with the law (payoff rules). The politicians themselves think of the CLUP as something that has to be done, but that they do not necessarily want to prioritise. They do have an interest in the plan passing the City Council without too much fuss, however. It could be costly to them if the plan drags out and becomes a hot potato in the next election.

To sum up, the rules in use on the political action arena reveal that the dominant mode of interaction is hierarchical. There are elements of other interaction modes on this action arena too, however. No party is strong enough to pass the plan on its own. It is, therefore, likely that some deals will have to be made between different parties (network governance mode).

3.3. Rules in Use on the Bureaucratic Action Arena

The relevant position rules on the bureaucratic action arena are those on the executive board at the CPO: the director and the vice director, along with the heads of the nine different departments (including the head of the DCLUP). There are also civil servants at the staff department at the CPO, the project leaders of the CLUP, the civil servants in charge of the SEA, the other civil servants at the DCLUP, civil servants working at other local administrations, representatives from GR and BRG, and experts.

These positions are occupied in a hierarchical fashion (boundary rules) controlled ultimately by the local politicians. The Building Committee appoints, the head of the DCLUP, even though they base this decision on nominations from the executive board at the CPO. The department head, in her turn, is responsible for the rest of the staff at her department. The everyday work at the DCLUP is distributed based on discussions and agreement, sometimes even on a silent understanding, rather than authority, however. Due to different qualifications and specialisations, the civil servants themselves perceive that the division of labour within the group happens more or less naturally (network governance mode).

The civil servants and experts from outside the CPO are included in reference groups, in which they are expected to represent the perspectives of their particular organisations or knowledge. According to the head of the DCLUP, there are no formal boundary rules for how this process should be done or who should be included. There are informal boundary rules in use, however. There is, e.g., a close collaboration between the six technical administrative departments on the local level (see II.2.1.2). Overlooking any of these bodies during the CLUP process would have been considered a deviation from praxis.

The authority of the civil servants lies in their ability to control how the commission is carried out (authority rules). This has to be accomplished within the time frame specified by the politicians, however, and the politicians want the plan to be adopted before the next election, which limits the scope of the plan (scope rules). The civil servants need to present a proposal that the politicians can pass without having to make any major adjustments. Adjustments are time consuming. The scope of the CLUP is, therefore, restricted to solutions that the civil servants believe to be politically viable and physically possible.

The civil servants work fairly independently with the sections of the CLUP that they are responsible for. The others might make comments and offer suggestions, but to what extent these views are taken into account is up to the individual civil servant in charge of that particular part of the plan, at least as long as the balance and coherence of the plan are not compromised. This informal decision-making structure (aggregation rules) is a consequence of the diversified backgrounds of the civil servants working at the DCLUP. The degree of specialisation in the group makes them accept one another as experts within their separate fields.

The Building Committee that settles the budget for the DCLUP. There was no additional funding provided for the CLUP process, but the head of the DCLUP states that the department has access to sufficient economic means to carry out the development of the plan (payoff rules). If they experience any constraints due to a lack of resources, these concern time and staff rather than money. A tight time frame, other professional assignments, and mobility in the work force limit the number of work hours invested into the CLUP process. During the first year, 2005, only three people were occupied full time with the plan. This number increased gradually over time to six people in 2006, and eight in 2007. The lack of commitment among the staff at the DCLUP in the beginning of the CLUP process might have been a consequence of the payoff rules not favouring such a commitment. The benefits gained by individual civil servants for putting other projects on hold while working on the CLUP are not obvious.

To sum up, the rules in use on the bureaucratic action arena show that the governance mode is mainly hierarchical, although the everyday work at the DCLUP appears less so. The authority and aggregation rules, e.g., correspond better to a network governance mode.

3.3.1. Rules in Use in the Social SEA Action Situation

The social aspects of the SEA were the first issues to be discussed in greater depth. These discussions took place during two meetings in an early stage of the public consultation period: one in which the participants were given a quick overview of the CLUP, and of the SEA in particular, and one in which they were expected to offer comments to an SEA draft. Written comments from the participants were supposed to serve as a starting point for the discussions at the second meeting and also to form a base that civil servants 1 and 4 could use when developing the SEA.

The positions (position rules) in this action situation were those of the two civil servants in charge (civil servants 1 and 4), their colleagues from the DCLUP, representatives from other local departments (the Dep. of Park and Nature Services, A More Secure and More Human Göteborg, the City of Göteborg, and Torslanda District), and experts (one researcher from the Dep. of Sociology at Göteborg

University and one researcher from the Dep. of Architecture at Chalmers University of Technology).

The decision to invite these particular actors (boundary rules) relied entirely on the networks of civil servants 1 and 4. Together, they composed a list of suitable people whom they had had work contacts with before and whom they knew were specialists on socially related issues. Many of them had been involved in the CLUP process at an earlier stage, so they already had some basic knowledge of the plan. The requests to participate were sent out to these individuals directly. They were not directed to the organisations. Hence, the positions were controlled by civil servants 1 and 4 almost entirely. It was possible for others to make suggestions, though.

The information rules allowed the participants to attend an information meeting. Those who showed interest were also sent the CLUP before the first meeting. At the first meeting, civil servants 1 and 4 took turns to present the main points of the CLUP as well as the SEA. The participants had plenty of time to ask questions.

There are no formal, written authority rules. Civil servants 1 and 4 have had the authority to put together the discussion group, to set the dates for the meetings, to decide the scope of the discussions, to lead the discussions, and to ask the participants to supply written comments to the SEA. The civil servants 1 and 4 have not had the authority to order people to participate, however. They have only been able to ask for input. This has been granted in most cases since it is through discussions like these that coordination within the local administration is achieved. Participating in these kinds of coordinations is also a way for different departments to ensure that their special interests and perspectives are taken into account (payoff rules).

Neither have the civil servants 1 and 4 had the authority to order participants to contribute written comments. They have not been able to offer them any economic incentives for doing so, or threaten them with reprisals should they not write anything (payoff rules). Consequently, not everybody did provide written comments in the end. The most common reason was all participants did not have enough time to do so.

The amount of time that the participants were able to spend preparing for the meetings varied. In most cases, they had one or a few colleagues at their own department with whom they could discuss the SEA. Some of them even occupied positions that authorised them to demand this kind of support and input from their colleagues. Most of them relied on their own ability to awaken their colleagues' enthusiasm for the subject (authority rules), though.

The participants were expected to represent the perspectives and expertise of their organisations (authority rules). They have not had any direct power over the final plan that will be voted upon by the City Council; they have only been invited in

order to contribute to the discussion that the civil servants at the DCLUP base their final draft upon (authority rules).

3.3.2. Rules in Use in the Ecological SEA Action Situation

The ecological aspects of the SEA were the second perspective to be developed during the public consultation period. The approach used is almost identical to that in the social action situation. I will, therefore, only give an account of the rules that differ between them.

The position rules include the two civil servants in charge (civil servant 1 and 5), their colleagues from the DCLUP, and representatives from other local departments (the Dep. of Park and Nature Services, the Dep. of Environment Services, the CPO, the City Museum, Göteborg Energy Ltd, the Dep. of Recycling Services, the Dep. of Water Services, and the Dep. of Housing and Accommodation Services).

The ecology group was divided into two subgroups. The subdivision was done in order to make some extra space for the ecological issues in the SEA. The scope rules for the first of these two groups were limited to issues related to recycling and emissions, and the second one was limited to preservation and development.

Since the ecological group met after the second discussion of the social group, civil servant 1 could supply the participants in the ecological discussion with information about what the previous group had brought up. He only provided this information when asked, however, and he did not elaborate his answers much. Also, he only mentioned issues that the ecology group had already touched upon in their discussions (information rules).

3.3.3. Rules in Use in the Economic SEA Action Situation

The economic aspects of the SEA were the last ones to be discussed and they were dealt with fairly differently. The relevant positions (position rules) are the two civil servants in charge (civil servant 2 and 3), their colleagues at the DCLUP, civil servants at other local departments (the CPO, the Dep. of Housing and Accommodation Services, the Dep. of Recycling Services, the Water Services, A More Secure and More Human Göteborg, the Public Transport Authority, the City Museum, the Dep. of Environment Services, the Park and Nature Services, and the Sport and Association Services), representatives from the GR and BRG, consultants from Sweco Eurofutures, consultants from Sweco, and one researcher from Chalmers.

Civil servants 2 and 3 invited tenders from two consultant firms, but only Sweco Eurofutures showed any serious interest in the commission (boundary and payoff rules). Together with two consultants from this company, civil servants 2 and 3 settled on a work plan (scope, aggregation, and information rules). The work plan included a survey study, the hosting of a discussion group, and the writing on a final report. Three aspects of the economic impact of the CLUP should be in focus in this

work: population and housing, business and labour market, and economic growth and integration of the region.

The survey respondents were mainly selected by civil servant 2 and 3 (boundary rules). They limited this group to civil servants working in the local administration, since they were looking for people who possessed enough time and knowledge to answer the survey quickly. The individuals who came to represent different parts of the local administration were parts of civil servant 2's and civil servant 3's professional networks. The consultants from Sweco Eurofutures only made minor changes to this list of respondents; they added two of their own colleagues at Sweco, whom they knew had previous experience from working with similar projects in the same geographic area. All together, 33 individuals were included.

The participants in the discussion group were selected by the consultants from Sweco Eurofutures based on the responses to the survey (boundary rules). They invited those survey respondents who had elaborated their answers, e.g. by adding comments to the regular multiple choice questions, since these individuals might be expected to have a greater interest and/or knowledge in the issues related to the SEA. 13 people were invited.

3.4. Rules in Use on the Public Action Arena

The position rules on the public action arena are citizens, interest organisations, political organisations, local, regional and national administrative bodies, private businesses and the media. The boundary rules are non-restrictive; anybody who is interested in participating on this action arena may do so. According to the aggregation and information rules, which are specified by law, the plan has to be available to the public during the consultation period and the exhibition. There is no requirement to provide documents in any other language in Swedish, however. The CLUP and the SEA have only been available in Swedish, which has limited the possibilities for non-Swedish speakers to participate in the consultation process.

The fact that anybody can participate does not mean that everybody does so on equal terms, however. The authority rules on this action arena are asymmetrical. The public has the right to express their thoughts on the plan, but these do not need to be integrated into the plan. As long as the civil servants argue in the consultation summary why a certain idea is not included in the plan, they are free to disregard it.

The scope rules are specified beforehand. It is unlikely that the civil servants and the politicians change the scope of the plan after the public consultation. Most actors also possess too limited resources to be able to suggest any radical changes of the structure of the plan.

The payoff rules on the public action arena differ for organisations and citizens. A citizen can make an individual choice of how much time and effort she

thinks it is worth spending on the plan. If she lives in an area that the plan will have a great impact upon, she might benefit more from participating in the discussion. An organisation, on the other hand, might need to make a collective decision depending on what is the most advantageous to their members in general.

To sum up, the rules in use on the public action are hierarchical and network oriented, just like on the two previous action arenas. The network interaction mode is somewhat more prominent on this action arena, though.

3.5. Changes

See II.4.5.1.

4. IDENTIFYING KNOWLEDGE SCAPES

4.1. Dominant Knowledge Forms

In Heinelt et al (2006), Matthiesen (2005), and “the Amendment to the Conceptual Frame”, ten different knowledge forms divided into three knowledge bundles are identified: the professional knowledge bundle (scientific, professional, expert, and product knowledge), the institutional knowledge bundle (steering, institutional, and economic knowledge), and the local knowledge bundle (local, everyday, and milieu knowledge). Knowledge forms from all these three bundles can be found in the Swedish SEA case, but the frequency and the status of different knowledge bundles depend on the action area.

4.1.1. Dominant Knowledge Forms on the Political Action Arena

According to the Swedish constitution, all power in Sweden springs from the people. The politicians are merely tools for bringing about the will of the people. If this is indeed the situation, one might assume that the local knowledge bundle is the dominating one on the political action arena. An interview with one of the politicians also confirms that these forms of knowledge are important. The politician describes how she has taken great trouble to introduce the CLUP to the local members of her party and to listen to their reactions to it, a process that she does not perceive that the civil servants at the CPO have facilitated. She is actually quite unhappy with them for not providing paper copies of the CLUP to everybody who is interested. Instead, they direct people to a PDF-file on their website, which politician 1 thinks decreases the chance of many people reading it. Also, the civil servants did not arranged any open

meetings between the politicians and the public, something that she claims would have been of great importance to her:

They have not quite understood the value of that, I believe. That's a tremendous task for politicians. I can have opinions and ideas, but they need to be supported by the voters. As a politician, I want to know my voters' views so that I can voice them (interview with politician 1).

When I point out that there have, in fact, been four public information meetings, none of which any of the members of the Building Committee attended, she replies that the Building Committee was not invited to these meetings. She is guessing that the chair of the Building Committee has instructed the civil servants not to notify them, since the chair herself is too busy to attend. Thus, this is an attempt from the chair to deny the representatives from the other parties the opportunity to gain a political advantage by being seen in public and accumulating different kinds of local knowledge.

Since the chair doesn't have the time to spend, she doesn't want the other parties to run around at those meetings winning votes. Because you can become a bit popular if you move around among people and listen and seem interested and so on. Because there is a bit of competition for the voters too, of course (interview with politician 1).

Knowing voters' opinions on different matters is likely to constitute a political advantage in several ways. It does not only make it possible for the politicians to represent their voters more accurately; it also serves to increase the politicians' steering knowledge. They can use their knowledge about what the people think strategically, e.g. as an argument in political discussions. Doing so may make it easier for them to win majority support for their own ideas (interview with politician 1).

In order to gain a majority in the City Council, it is not enough to know what the people think, however. No party is big enough to rule by itself in Göteborg at present. Consequently, politicians also need knowledge of where the other parties stand. This kind of knowledge also belongs to the institutional bundle.

The professional knowledge bundle plays a subordinate role to the institutional knowledge bundle on the political action arena. This does not mean that the professional knowledge bundle lacks importance entirely, however. Politician 1, e.g., complains that the civil servants sometimes underestimate the politicians in the Building Committee. She points out that these politicians are very competent people with academic degrees in architecture and law. In other words, she refers to knowledge from the professional bundle when proving the politicians' competence.

4.1.2. Dominant Knowledge Forms on the Bureaucratic Action Arena

Knowledge from the local bundle is frequently used on the bureaucratic action arena. Previous evaluations of the local situation in Göteborg and in the region constituted one of the starting points of the CLUP. Also, several statements made by the civil servants show that they respect and value local knowledge coming from the public:

Also, those who live in the area know how parks and playgrounds are used. It can be hard for somebody who has never been there, or just visits the place on a few occasions, to judge whether a park is well-used or not, but those who live there might say: “No, you can’t build in this park, because we use it all the time!” Furthermore, a place might be dear to by those who live in the neighbourhood and such values are hard to observe for an outsider (interview with civil servant 4).

However, on the bureaucratic arena, it would be close at hand to assume that the professional knowledge bundle is the dominating one. It is also true that the actors on this arena frequently refer to scientific research, their professional experience, and their academic background in order to gain credibility. Civil servant 2, e.g., started to doubt that they had chosen the right point of comparison in the SEA. In the document that was sent out for public consultation, it was stated that the impact of the CLUP is compared to the expected impacts should the development of the city not be regulated at all. What would be the most fruitful alternative is something that is discussed on several occasions throughout the SEA process, however. The conclusion that civil servant 2 comes to, is that the most reasonable point of comparison would be the situation of today. He bases this statement on two scientific knowledge sources: 1) a lecture on traffic planning by the English professor Phil Goodwin, and 2) a master thesis comparing the conclusions of an EIA depending on the choice of “do nothing”-alternative. He also refers to his previous professional experiences (interview with civil servant 2).

Something that confirms the high status of the professional knowledge bundle on the bureaucratic action arena even further is the fact that civil servants refer to it when giving their reasons for trusting others. When civil servant 4 motivates why certain actors are invited to the workshop on social issues, she says that she expects some of them to contribute opinions based on their access to academic and scientific knowledge. Acquaintance with Richard Florida’s theories on creative environments is explicitly mentioned. Another of the participants is selected because of her professional experience of working practically with social issues on a city district level (interview with civil servant 4).

The knowledge bundle that dominates the bureaucratic arena, though, is not the professional one. It is the institutional knowledge bundle. Even though the professional knowledge bundle enjoys a high status, it always has to yield to knowledge about the political system. It does not matter if an actor can provide scientific evidence that points to the environmental and economic value of a particular measure, if the civil servants at the DCLUP know that they will never be able to get a suggestion like that passed the politicians. Civil servant 2 describes his task as providing the politicians with a basis for decision “that respects the fact that the political system has other values. That is their role really” (interview with civil servant 2). Project leader 2 expresses the same thing:

Perhaps you as a civil servant feel that this will never work, but you know that the politicians are of the opinion that this should probably work. It's not the civil servants' statement, but actually the politicians' statement that you write (interview with project leader 2).

Unfortunately, civil servant 2 never specifies what he means by his statement "that the political system has other values", but from the context, I feel confident that he refers to something that is closely related to the institutional knowledge bundle. He implies that politicians' decisions are made on other grounds than the ones preferred by civil servants. This can be interpreted as politicians do not primarily rely on knowledge forms from the professional knowledge bundle, but on the institutional one. The possibility of putting together an SEA that primarily considers the kind of knowledge that the civil servants themselves appreciate the most (the professional knowledge bundle) is never seriously considered. In fact, any attempt to do so is greeted with disapproval from other civil servants.

4.1.3. Dominant Knowledge Forms on the Public Action Arena

In their contacts with the public, the civil servants at the DCLUP take great care to appear competent in relation to the professional as well as the local knowledge bundle. They arrive at the public information meetings well prepared with a flashy PowerPoint presentation and with colourful posters that are displayed on big screens around the room. There are always quite a few of them present. The head of the department, project leader 2, and the civil servants 4, 5, and 7 attend every one of these meetings together with at least two people from the district office. The group is composed so that there will always be somebody who can answer questions about traffic problems, the environment (forms of professional knowledge), and how the CLUP will affect that particular district (forms of local knowledge). Before the meetings, they also make sure to give each other a warning if there are reasons to expect reactions on a specific issue that is of current importance in the district (forms of local knowledge).

It is also clear that knowledge from the local knowledge bundle is something that the public take for granted that the civil servants should be able to supply. The questions during the meetings often revolve around local matters that are far too detailed to have any clear connection to the CLUP. The civil servants are supposed to be familiar with every little slope, road intersection, and bus stop in the area and they face harsh criticism at the faintest sign of them not possessing this kind of knowledge. One woman, e.g., is shocked to find that none of the civil servants has ever been to the deserted forest slope in Partille that she speaks of, in spite of the fact that Partille is not even a part of Göteborg; it is an independent municipality bordering Göteborg (information meeting in Gamlestaden).

The civil servants gain the audience's respect as the meeting progresses, since they prove capable of answering the majority of the detailed questions asked. Below,

is an example of how civil servant 2 meets a question from a 45-year-old woman by referring to his and the other civil servants local knowledge. He shows that he has a personal experience of the problem described by the woman, which increases the credibility in his final statement that they are trying to solve it:

The woman: Why is there only one person working on the trams? /.../ The driver has no chance of knowing what's going on in the last carriage, which results in scribbles, violence, people not paying and a dirty and unsafe environment.

Civil servant 2: No, it's not easy being a tram driver. /.../ We know that people prefer travelling in the first carriage because they feel that they're safer there. /.../ Only, when I came here now, I saw a tram stop that had been vandalised and that was in the middle of the day. We're co-operating with the police and the youth recreation centres in order to find a solution to the problem (information meeting in Frölunda).

Another example is when a 35-year-old man from Stockholm, judging by his accent, asks if the possibility of building an underground has been discussed. The project leader answers this question first and she does so based on expert and economic knowledge. When she is done, however, civil servant 8 adds that "I also think that it's much nicer travelling over ground" (information meeting in Frölunda), a comment entirely founded on the civil servant's own personal experience (everyday knowledge). The rest of the audience reacts very positively on this emotional comment and several people voice their support. It is the Göteborg complex towards the capital of Stockholm that kicks in. Nobody is allowed to criticise the Göteborg public transportation system but the people from Göteborg themselves, especially not a snotty brat from Stockholm. So, through her unprofessional comment, civil servant 8 proves her emotional loyalty towards Göteborg. She becomes one of the people in the audience against the outsider from Stockholm.

This interchange shows that local knowledge is not easily applicable outside the original context. The man from Stockholm's personal experience (everyday knowledge) of an underground system that is faster and less intrusive than trams is not worth much in Göteborg.

This does not mean, however, that of everyday knowledge accumulated in a Göteborg context is always valued. An elderly gentleman who complains "it's so complicated to travel by public transport. You're required to have one of those pay cards that you have to stamp" is only laughed at. His feeling of confusion does not receive any understanding at all. On the contrary, civil servant 8 dismisses him: "No, pay cards work just fine. There's nothing strange about them" (information meeting in Frölunda).

Overall, there is a bias in the public consultation process against everyday knowledge (not knowledge about local facts however). The public meetings serve as an opportunity for the civil servants to spread information about the CLUP and for

people to ask questions. Their main purpose is not to provide the civil servants with new knowledge. The civil servants are not required to consider the criticism and ideas that are brought up during the meetings until they are submitted, in written form, to the CPO. The fact that it is not sufficient to vent one's concerns and worries about the plan verbally is likely to filter out people who are not comfortable expressing themselves in writing, or who underestimate the value of their own knowledge. This problem is illustrated by a woman of 45 who asks what is acceptable to write in the formal comments to the CLUP:

Frequently, it's just about a feeling you have for something. You feel for the place where you live. You care about it and feel that something is wrong, but can you refer to feelings when you submit written comments, or do you need to have facts? I can't make an argument based on how the air quality will be affected by this plan, e.g.

As this quote makes clear, it is not just certain people who risk being filtered out from the SEA process, but also certain kinds of knowledge. The woman takes for granted that arguments based on the professional knowledge bundle are acceptable, whereas she is less convinced that everyday knowledge (local knowledge bundle) is so. The department head tries to encourage and advice the woman by replying:

It's the politicians who will evaluate the written comments that are submitted, so it's important that you think about expressing yourselves in a way that you believe will appeal to the politicians. You have to keep in mind who the addressee of the message is. It's possible that a feeling can get through too.

The department head implies that the woman should not just rely on everyday knowledge, even though this might work as well. Instead, she suggests that the woman should try to think about what kinds of knowledge are likely to convince the politicians. Interestingly enough, the woman, yet again, assumes that it is some sort of professional bundle knowledge, or possibly institutional bundle knowledge, that is called for, even though the department head is never that specific. The woman expresses her frustration over this knowledge requirement by saying that "it feels a bit like the giant [Goliath] against David. Ordinary people don't have the kind of knowledge that you civil servants possess".

This dialogue shows that the civil servants are perceived as highly influential actors in the CLUP process due to their connection to the professional and institutional knowledge bundle. Contrary to the consistent testing of the civil servants' local knowledge, the public rarely challenge them with regard to these knowledge forms. One of the few exceptions is an incident where a woman interrupts the project leader during a presentation and questions the project leader's competence to inform her on these matters. She demands that the project leader clearly states her full name and formal education. When she understands that the project leader has an academic degree as a civil engineer (scientific knowledge), she is satisfied. Note that

the woman never questions the legitimacy of scientific knowledge, only that the project leader possesses it.

4.2. Knowledge Holders

Involved actors can be defined in relation to the common resource that is under distribution, e.g. if they are right holders, spatial holders, share holders, etc. An analysis of these kinds of holders was made in section II.2.1. In this section, I will discuss what kind of knowledge holders the involved actors are. They will be defined by their relationship to knowledge.

There are three main kinds of knowledge holders (“The Topic Guide”, p.19): traditional knowledge roles, traditional professions, and quasi-professions. The Swedish SEA case mainly includes the two traditional kinds of holders. Traditional knowledge roles are, e.g., played by the experts from Göteborg University and Chalmers University of Technology. Traditional professions are primarily represented by the civil servants and the politicians. The group of civil servants at the DCLUP, e.g., consists of business scholars as well as engineers, which are two traditional professions.

Being economists, the experts from BRG may also be thought of as traditional actors. Economics is a well-established social science, but the experts are also knowledge brokers. They act the link between the politicians and the civil servants and the knowledge these actors need for the CLUP. Thus, the experts become gatekeepers of knowledge. They filter the knowledge that reaches the politicians and the civil servants. This is true also for the consultants from Sweco Eurofutures, who are in charge of the economic part of the SEA, and the university experts. These actors are, therefore, examples of quasi-professions included in the SEA process.

4.3. Social and Spatial Distribution of Knowledge

The social distribution of knowledge in the Swedish SEA cases is biased towards people with high education. This is the situation on all three action arenas.²² Civil servants as well as elected politicians normally have a higher education than the average citizen. All civil servants interviewed have something equivalent to a college degree.

The spatial distribution of knowledge is concentrated to the Göteborg area. Most of the politicians and civil servants involved have lived in Göteborg for a long time and have intimate knowledge of the city. They live in the nicer areas, though, not in the segregated immigrant suburbs. Consequently, their local knowledge is

²² For a discussion on the social and spatial distribution of knowledge on the public action arena, see II.2.1.3.

somewhat biased. When they discuss those segregated areas, e.g., they do so from an outside perspective, which means that they have a tendency to either romanticise or denigrate life there. This is a problem of which the civil servants are aware, however.

4.4. Excluded and Silent Knowledge

No knowledge form has been excluded entirely from the Swedish SEA process (see 4.1). Nor is any knowledge form completely silent, in the sense that it is only implied (Heinelt et al 2006:29). It is possible that some knowledge forms would have emerged more clearly than they do now had the actors on the bureaucratic action arena been more heterogeneous, though. The majority of the participants on this action arena are civil servants working within the local administration. Some things that are now taken for granted (see II.2.3.2) might have required clarification (explicit knowledge) had other actors, like representatives of private businesses, also entered. I suspect that this would have been particularly relevant for milieu-knowledge.

4.5. Relevance of Reflexive Knowledge

The focus of this section is to what extent an organisation can learn and produce policies that are legitimate and likely to support a sustainable development. This means that all individual actors who have been involved in the SEA process will not be given equal attention in the analysis. Instead, I have chosen to direct my attention towards one of the groups who plays a pivotal role in the production of the SEA: the civil servants at the DCLUP. They are the ones responsible for the development of the SEA and they are also likely to be involved in similar processes in the future. Consequently, the ability of these particular civil servants to make use of the knowledge available to them has a great impact on the quality of this SEA as well as future ones. I claim that there is a good chance that the policies taken by the municipality will lead to a sustainable development if the civil servants at the DCLUP develop a reflexive knowledge that enables them to make the best possible analysis of the environmental impact of the CLUP. This is also the case should they contemplate the SEA process itself in order to improve it over time. On the other hand, if they fail to learn and stick to the same line of reasoning, they risk excluding relevant knowledge from the SEA. This could not only result in drawing misleading conclusions. What is even worse: these mistakes are likely to be repeated in every SEA produced by this group. It is, therefore, of great importance to study what these particular civil servants have learnt throughout the SEA process.

The relevance of reflexive knowledge is hard to decide without anything to compare to. How many of the civil servants and how many lines in the SEA document need to change before it is relevant to speak of reflexive knowledge? I will

settle for a simpler claim: that the relevance of reflexive knowledge is greater if there are signs of it in the exhibition draft of the SEA than if it is only present in the interviews with the civil servants. To praise other people's knowledge, or to express an understanding of their views is not much of a reflexive knowledge if you fail to take any of these ideas into account when it comes to the crunch: when it is time to formulate the actual SEA document. After all, it is the written policy that will direct the development of the municipality in the end, not the friendly discussions at the DCLUP.

It is also possible to make a distinction between strong and weak reflexive knowledge. Strong reflexive knowledge is when the actors involved start testing the limits between knowledge and non-knowledge by questioning the relevance, righteousness, precision, and fairness of their own knowledge. Weak reflexive knowledge, on the other hand, simply generates translations and structured interdependencies between different kinds of knowledge forms (Heinelt et al 2006:42-43). I will conclude that reflexive knowledge is more relevant in the Swedish SEA case if the reflexive knowledge displayed is strong rather than weak.

4.5.1. Relevance of Reflexive Knowledge in the SEA Process

The SEA process was fairly *ad hoc* and a lot of the reflexive knowledge generated regards how an SEA should best be developed. E.g., participants in the SEA action situations started questioning the basic principles that direct how the 13 main issues should be solved in the plan (see II.1.1.1). They wanted to draw the civil servants' attention to the fact that some of these basic principles are contradictory. Goal conflicts between the 13 issues were also brought up. The importance of showing how the 13 issues are related to one another was stressed on several occasions. This criticism was something that the civil servants at the DCLUP took to heart. They realised the need to structure interdependencies between different bundles of knowledge forms and their form-specific validity claims, which is a weak form of reflexive knowledge.

Another interesting example is the insight that the scope of the SEA is limited, since the whole CLUP rests on the premise that there will be an economic growth in the Göteborg area in the future. Central policy documents also state quite clearly that such a development should be encouraged and strived for ("Uthållig tillväxt!"). The implications of this premise dawned on the civil servants at the DCLUP over time. The first time the issue came up was in the social and ecological SEA action situations. The participants in these workshops pointed out that the economic issues are given first priority in the plan, which makes it impossible for them to make suggestions that might be better from a social or environmental point of view, but that might not promote economic growth.

Furthermore, this weak reflexive knowledge was later developed into a

strong reflexive knowledge. During the second workshop in the social SEA action situation, the head of the DCLUP declares that they are going to hold a final workshop where all three perspectives (social, ecology, and economy) are discussed at the same time. She motivates this decision by referring to the weak reflexive knowledge that she has gained recently through the workshops: that the different perspectives may result in different conclusions that are not easily combined. She says that to what extent the two goals sustainable development and economic development contradict or complement each other needs to be discussed in a meeting where experts on all three perspectives are represented. This is an example of strong reflexive knowledge, where the head of the DCLUP shows the ability to understand criticism regarding the work process and express willingness to change it accordingly. This illustrates how weak reflexive knowledge (the realisation that different forms of knowledge need to be combined) develops into a strong reflexive knowledge (an understanding of how the work process can be change to attain a combination of different knowledge forms).

4.5.2. Relevance of Reflexive Knowledge in the SEA Document

The things that the civil servants at the DCLUP learned during the SEA action situations and the public consultation period in general are not only expressed in interviews. They are also clearly visible in the exhibition version of the SEA document. A first observation is that the SEA has become longer. The exhibition SEA is 44 pages, compared to the eight pages of the consultation version.

Separate sections in the text specify exactly what has been changed in the document as a result of the consultation. Primarily, it is the social, ecological, and economic perspectives that have been elaborated. They were barely distinguishable in the earlier version. Now, they constitute one of the backbones of the SEA document, but potential conflicts between these perspectives are not openly acknowledged like they were during the SEA process. Nor are contradictions between the eight basic principles of the plan (see II.1.1.1 and II.4.5.1). Instead, the problems in focus are the tensions between the 13 strategic issues of the plan (see III.1.1.1). These are presented in a matrix that states whether the issues work together, if they pull in different directions, or if they have no effect on each other. This way of illustrating potential goal conflicts was suggested by one of the participants in one of the SEA action situations. Thus, it is obvious that the weak reflexive knowledge accumulated in the SEA process has been used in the production of the actual SEA document.

Strong reflexive knowledge is also visible in the SEA document, particularly in the methodology section. It is stressed, e.g., that there are other factors that have a much higher impact on the development of the municipality than the CLUP. Thus,

there is an awareness of the limits of applicability of the conclusions in the SEA, which is a form of strong reflexive knowledge.

The basic assumptions behind the SEA are also made explicit. One of them is that all the measures suggested in the CLUP are actually carried out. The environmental impacts will be quite different, e.g., if the planned investments in the public transportation system are not made. There is no way the civil servants can know whether this will be done or not when they write the SEA and the fact that they realise this problem is an example of strong reflexive knowledge.

A third example of strong reflexive knowledge is the questions regarding the “do nothing”-alternative. These questions concern what the “do nothing”-alternative comprises and what other possible points of comparisons could have been used. This discussion shows that the civil servants reflect on their own work in a critical way that corresponds to strong reflexive knowledge.

4.5.3. Summary of the Relevance of Reflexive Knowledge

My conclusion is that reflexive knowledge is relevant in the Swedish SEA case, in the process leading up to the SEA as well as in the SEA document itself. Moreover, the reflexive knowledge reached is not only weak; there are examples of strong reflexive knowledge that questions knowledge boundaries.

Table II.2. Relevance of Reflexive Knowledge

		SEA Case	
		SEA Process	SEA Document
Reflexive Knowledge	Weak	<ul style="list-style-type: none"> • Discussion of conflicting principles • Discussion of conflicting goals • Elaboration of perspectives • Discussion of conflicting perspectives 	<ul style="list-style-type: none"> • Elaboration of perspectives • Discussion of conflicting goals
	Strong	<ul style="list-style-type: none"> • Integrated work process 	<ul style="list-style-type: none"> • Critical discussion of methods

If compared to Simin Davoudi’s implementation models, it is therefore reasonable to claim that the Swedish SEA has been developed through a reflective model rather than an instrumental model (Davoudi 2006).

4.6. Contradiction between Knowledge Forms

Hierarchies between different knowledge forms become observable when knowledge forms clash. The discussion below illustrates such a clash.

Civil servant 10 is concerned about the potential contradiction between two of the basic principles of the CLUP²³: to keep characteristic features of the city (principle 2) and to concentrate the core of city (principle 1). She thinks that one of the major charms of Göteborg is its small town atmosphere that prevails even in the very city centre and she is worried that this atmosphere will disappear if the city becomes any denser.

The department head objects to this by stating that this is not the intention with the plan. In other words, the department head refers to her greater understanding of the ideas that have formed the policy document (institutional knowledge). She also offers an example that supports her objection by pointing at Haga, a rough working class neighbourhood that was gentrified during the 1970's and is now generally known as one of the most quaint areas, in spite of its central location. Confronted by the department head's institutional and local knowledge, civil servant 10 gives way and admits that she does not base her concern on anything but on her own feelings, which she implies may be incorrect. Everyday knowledge gives way to institutional and local knowledge.

The department head accepts civil servant 10's surrender most graciously and ascribes their differences to a misunderstanding sprung from the fact that the local and institutional knowledge behind the plan are not stated clearly enough in the document itself. The department head expresses something that can be interpreted as reflexive knowledge. She realises that some things that she and her staff take for granted are less obvious to outsiders and, therefore, need to be made more explicit in order to avoid similar misunderstandings in the future. A reconsideration of a routine (the way they normally write), no less. Thus, this discussion also serves as an example of how reflexive knowledge is valued higher than the knowledge forms of the local and the institutional knowledge bundles. The department head appears generous when winning the discussion by transcending the knowledge she displayed earlier.

The discussion does not end with this, though. Civil servant 10 makes a come-back. This time, she does not merely rely on everyday knowledge; she counters with a local example (local knowledge) of her own: Friggagatan, which is a noisy and polluted street, not far from the Central Station, surrounded by high buildings crammed into a very small area. The department head acknowledges that civil servant 10's example is indeed valid and the discussion seems to have reached a stand still, until civil servant 10 asks why some areas turn out like Friggagatan and others become as lovely as Haga.²⁴ The department head replies that the politicians do not always think that they can afford creating areas like Haga. Thereby, she

²³ See II.1.1.

²⁴ It may be interesting to note that both these areas are equally bad when it comes to the level of particles in the air. See the Swedish particulate matter case.

displays an institutional knowledge that contributes a greater understanding of the situation than the two examples of local knowledge do, which again reinforces the superiority of the institutional knowledge bundle over the local knowledge bundle. This institutional knowledge does not assuage the concern of civil servant 10, however. On the contrary, it has quite the opposite effect; there is now a negative institutional knowledge that counter weighs the positive institutional knowledge expressed before about the politicians' intention to preserve the small town atmosphere. The question that suddenly hangs in the air is whether the politicians will stay true to their original intention, or if economic concerns will sway them into letting the whole city develop into an enormous version of Friggagatan. Interestingly, this obvious question is never asked, probably because everybody knows that none of the individuals present can answer it.

4.7. Knowledge Deficits

See II.2.2 and II.4.4.

4.8. Changes in Knowledge Formations

The most formal radical change in the knowledge formations is caused by the decision to hire consultants for the economic SEA action situation. Until that point the knowledge formations on the bureaucratic action arena had been very similar overall. The same actors moved between different action situations. They participated in reference group discussions on the CLUP, they assisted in the writing of the first draft of the plan, and they offered comments to the first draft during the public consultation period. The discussion was kept within the "municipal family". The inclusion of the consultants from Sweco Eurofutures changed this pattern as well as the dynamics in the knowledge formation on the action arena. Suddenly, new actors had entered the arena. The knowledge possessed by the civil servants did still play a major part in the economic SEA action situation, but their knowledge was aggregated in a different way, which opened up for new takes on old discussions.

5. IDENTIFYING THE INTERACTION BETWEEN KNOWLEDGE AND GOVERNANCE MODES

So far, I have only looked at governance modes and knowledge forms separately. It is now time to combine the two. The purpose is to enable tentative conclusions of

whether it is reasonable to assume a correlation between governance modes and knowledge forms. Rules in use and attributes of the actors are two variables that identify the governance mode on an action arena (see II.2.3 and II.3.2-3.4). If a certain kind of knowledge tend to dominate when these two variables correspond to a particular governance mode, it is possible that such a correlation exists. Since reflexive knowledge is of special interest in this study, I will end with an analysis that focuses on the relationship between this knowledge form and different governance modes.

5.1. Relationship between Governance Modes and Knowledge Forms

The most prominent governance mode in the Swedish SEA case is hierarchy. This is the case regardless of whether the governance mode is defined by the rules in use or the actors' attributes.²⁵ The second most common governance mode is networks, and the rarest one is markets. The same pattern prevails on all action arenas, although the dominance of the hierarchical governance mode varies somewhat. The political action arena is slightly more hierarchical than the bureaucratic action arena and noticeably more hierarchical than the public action arena (see II.2.3 and II.3).

The knowledge forms on the different action arenas have varied to a greater extent (see II.4.1). Overall, the institutional knowledge bundle dominates, but it holds a weaker position on the public action arena, where the professional knowledge bundle enjoys the highest status. It is clear, however, that the local knowledge bundle carries the least weight, even though it is stronger than the professional knowledge bundle on the political action arena.

Table II.3. The Status of Knowledge Forms in Different Governance Modes

		Knowledge Bundle		
		Local	Professional	Institutional
Governance Mode	A: Hierarchy, elements of network (the political AA)	2	3	1
	B: Hierarchy and network, elements of market (the bureaucratic AA)	3	2	1
	C: Hierarchy and network, noticeable market influence (the public AA)	3	1	2

Comment: AA = Action Arena. A = the most hierarchical action arena, B = the second most hierarchical action arena, and C = the least hierarchical action arena. 1 = the dominant

²⁵ This is why I do not divide this analysis into two sections, which is suggested in "The Topic Guide".

knowledge form on this action arena, 2 = the second strongest knowledge form, and 3 = the weakest knowledge form.

Table II.3 displays the ranking of different knowledge bundles on the three action arenas. The results indicate that the dominance of the institutional knowledge bundle is stronger in more hierarchical governance modes. For the professional knowledge bundle, the relationship is completely the opposite. The professional knowledge bundle is the strongest on the public action arena, which is the least hierarchical one, and it is the weakest on the political action arena, where the hierarchical governance mode is the most prominent.

5.2. Relationship between Governance Modes and Reflexive Knowledge

Reflexive knowledge can be weak and strong. Both forms of reflexive knowledge are relevant in the Swedish SEA case (see II.4.5). The question in this section is whether they are equally relevant on all three action arenas, or if there is a correlation between the governance mode on an action arena and the level of reflexive knowledge achieved. Since it is possible that the dynamics between governance modes and knowledge forms affect actors differently depending on what kind of holders they are, I will limit this analysis to one kind of actor: the civil servants at the DCLUP. I argued earlier that these civil servants are particularly interesting in this study because of the central part they play in the SEA process (see II.4.5). They are also the only actors who move between all three action arenas. By observing to what extent the civil servants at the DCLUP develop reflexive knowledge on different action arenas, I can draw tentative conclusions regarding the correlation between governance modes and reflexive knowledge. It is mainly the public action arena that will be discussed in detail here, since the relevance of reflexive knowledge on the political and bureaucratic action arena has been analysed elsewhere (see II.4.1.2 and II.4.5).

Table II.4 summarises the different kinds of reflexive knowledge that has occurred on the three action arenas that the SEA process comprises. As we can see, there are instances of weak as well as strong reflexive knowledge on all arenas.

Table II.4. Reflexive Knowledge in Different Governance Modes

		Reflexive Knowledge	
		Weak	Strong
Governance Mode	A: Hierarchy, elements of network (the political AA)	<ul style="list-style-type: none"> • Understanding of how the validity of a knowledge form varies in different contexts. 	<ul style="list-style-type: none"> • Ideas of how to improve the interaction with the politicians
	B: Hierarchy and network, elements of market (the bureaucratic AA)	<ul style="list-style-type: none"> • Discussion of conflicting principles • Discussion of conflicting goals • Elaboration of perspectives • Discussion of conflicting perspectives 	<ul style="list-style-type: none"> • Understanding of the need for an integrated work process • Critical discussion on methodology
	C: Hierarchy and network, noticeable market influence (the public AA)	<ul style="list-style-type: none"> • Realising the use of local knowledge • Realising conflicts between goals and principles 	<ul style="list-style-type: none"> • Understanding of how comments are limited by the present structure of the SEA document • Ideas of how to improve the consultation process

Comment: AA = Action Arena. A = the most hierarchical action arena, B = the second most hierarchical action arena, and C = the least hierarchical action arena.

The civil servants show, e.g., that they understand how the kind of knowledge that they value the highest (professional bundle knowledge) carries less weight on the most hierarchical action arena, the political one (see II.4.1.2). They are aware that validity claims are form-specific, which is a kind of weak reflexive knowledge.

They also have ideas of how the interaction with the politicians on this action arena may be improved in the future. Project leader 2 suggests that they should have thematic meetings with the politicians in the local districts too and not just with the Building Committee (interview with project leader 2). In doing so, she questions the trusted structures through which the civil servants normally work. She is expressing a strong reflexive knowledge.

On the least hierarchical action arena, interactions with the public teach the civil servants to appreciate the importance of other kinds of knowledge than their own. This quote, e.g., reveals how civil servant 4 thinks about local knowledge:

Contacts with the public are very important and they have proved an efficient way of working. You save a lot of time if you gain approval on that level at an early stage. It is more time consuming in the beginning and it requires

resources as well, but in the end, you really save time, because there is a smaller risk of appeals against such projects. /.../ Otherwise, almost all of these kinds of decisions are appealed against. Besides, in this way, you can make use of the local knowledge possessed by the public (interview with civil servant 4).

The document that summarises the comments from the public (Samrådsredogörelsen) also includes a discussion of potential tensions between the 13 strategic issues (goals) of the plan and the eight basic principles directing how these issues should be solved. E.g., the strategic issue that recreation and health should be available as means of increasing the life quality of the inhabitants in Göteborg may be hard to achieve if the basic principle for future development is to build in centrally situated areas. Such a development will increase the density of the city and may result in fewer recreation areas for those who live in the city centre. The realisation that there may be potential conflicts between goals and principles and not just between goals and goals, and principles and principles, which were brought up on the bureaucratic action arena, is another example of weak reflexive knowledge developed on the public action arena.

There are also several instances of strong reflexive knowledge on the public action arena. The feedback on the SEA is positive in general, but if these positive comments mirror what people really think is not taken for granted. In an interview, project leader 2 points out that the comments are limited by the framework of the present documents. She says that people do not have the time and energy to come up with suggestions that would require major changes to the structure of the plan. Therefore, most comments concern details or parts of the plan, whereas potentially big and difficult problems are left aside. This critical approach taken by project leader 2 can be interpreted as a strong reflexive knowledge. She is questioning the validity of the comments to the plan based on their embeddedness in specific knowledge cultures and contexts.

How these limitations of the consultation process might be decreased is something that project leader 2 has given some thought. She has in fact several ideas of how the process may be improved. By using the Internet more and having thematic discussions with the public on easily accessible locations, she hopes to involve more people and encourage them to take a greater interest in similar plans in the future. This is another example of strong reflexive knowledge. She has learnt things that make her want to change routine courses of action.

Hence, the conclusion that can be drawn based on the results in this section is that there is no obvious correlation between governance modes and reflexive knowledge. Weak and strong reflexive knowledge can appear in very hierarchical governance modes as well as in less hierarchical ones.

5.3. Changes

In this analysis, I have compared the reflexive knowledge accumulated on action arenas characterised by different levels of hierarchy. An alternative method might have been to study if there are any changes in the reflexive knowledge of the actors when one action arena changes and becomes more or less hierarchical.

E.g., there is one action situation on the political action arena that is slightly less hierarchical than the others. It is action situation 2 (see Table II.2), when the civil servants at the DCLUP organise thematic group discussions about the plan in the Building Committee. The dynamics of these discussions is different than in regular political discussions, since the civil servants also participate. The politicians are divided into small cross party groups that are lead by a civil servant. This changes the rules and the hierarchical structure of the action situation. Normally, the discussions in the Building Committee are not so much about convincing the representatives from the other parties that you are right; your positions are already predetermined to a large extent by coalitions and party platforms. The open-minded and unprejudiced discussion about problematic issues in the plan that the civil servants try to induce is, therefore, perceived as a bit strange and naïve at first. Some kind of change does take place, though. Politician 1 perceives at least that they reach an understanding, if not an agreement, in the group that she is in (interview with politician 1). This can be interpreted as a first step towards reflexive knowledge. If so, the change in this action situation supports the hypothesis that it is easier for reflexive knowledge to arise in less hierarchical governance modes.

6. IDENTIFYING 'GOVERNANCE FOR SUSTAINABILITY'

6.1. Assessing Sustainable Development

The main research question that the GFORS-project is aiming at is how a sustainable development can be achieved. Does the Swedish SEA fulfil its purpose and contribute to “the integration of environmental consideration into the preparation and adoption of plans and programmes with a view of promoting sustainable development” (Directive 2001/42/EU:art.1)? The answer will not be available until twenty years from now, if even then. However, it is possible to identify aspects of the SEA that make the document more likely to contribute to a sustainable development. Some of these aspects are related to the comprehensiveness, aggregation, and consistency of the SEA. If an SEA is comprehensive, if the aggregation process has been

satisfactorily, and the content is consistent, there is a greater chance that the SEA will contribute to a sustainable development (Heinelt et al 2006:17).

6.1.1. Comprehensiveness

The CLUP process has involved an intense gathering of information from different kinds of sources. The civil servants at the DCLUP have made use of the expertise at other institutions, as well as previous written reports and evaluations. They have also had access to the opinions of politicians, researchers, business representatives, consultants, interest organisations, and the public. The only thing that seems to have limited the information available to them is whether they have had the time to collect it or not.

The work has resulted in an exhibition version of the SEA that includes the three perspectives normally brought up in relation to sustainable development: the social, ecological, and economic impacts of the CLUP. It also discusses potential conflicts between these perspectives as well as between the strategic issues and the goals in the plan. The fact that the economic perspective is slightly favoured due to the economic growth assumed in the plan is also mentioned.

6.1.2. Aggregation

An SEA that succeeds in discussing complex problems in a balanced and multidimensional fashion is ideal from an aggregation point of view (Heinelt et al 2006:8). The aggregation process in the Swedish SEA case has included several different perspectives. Something that has probably affected the level of complexity of the SEA negatively, though, is the fact that the different perspectives have been dealt with through separate work processes. It is possible that a more integrated process between the social, ecological, and economic parts would have enabled a more comprehensive and multifaceted analysis of the problems in the CLUP.

6.1.3. Consistency

The major consistency problem during the SEA process has been the “do nothing”-alternative. It became clear to the civil servants over time that they used different points of comparisons during the work progress. Some of them had contrasted the development that may be expected if the CLUP is adopted to the situation today, whereas others had evaluated the changes suggested in the CLUP compared to the expected development according to the old CLUP, ÖP01. This caused some confusion when it was time to combine the social, ecological, and economic parts of the SEA into one document for the exhibition. The final draft of the SEA exhibition document does not actually state clearly which of these possible “do nothing”-alternatives has been applied. It only says that the alternative would be that the CLUP is not adopted, which is not very informative. It does not say if this means that the

city would develop according to ÖP01, if it would not change at all, or if it would expand more or less randomly. The fact that the document is not explicit on this point might imply that the civil servants have not been able to agree on one of the alternatives in the end. Failure to reach an agreement is likely to have resulted in inconsistencies in the SEA.

Another inconsistency worth mentioning is the different methodologies used in the three parts of the SEA. The economic part of the SEA was based upon a Delphi survey and not just workshop discussions, which was the case for the social and ecological parts. The respondents answering the survey were pretty much the same kind of people who participated in the social and ecological workshops, however. They were civil servants employed at local departments. Thus, it is hard to say to what extent this methodological inconsistency actually has affected the comparability of the three perspectives.

6.2. Assessing the Legitimacy of Policy-Making

Another aspect that can also be used in order to predict to what extent the SEA will contribute to a sustainable development is the legitimacy of the process through which it has been aggregated. There are three kinds of legitimacy: input legitimacy, throughput legitimacy, and output legitimacy (Heinelt et al 2006:20).

6.2.1. Input Legitimacy

The input legitimacy is unclear, since there was some confusion in the beginning of whether it was the politicians or the civil servants who initiated the CLUP process. As soon as the City Executive Board had passed the petition of a new CLUP to the Building Committee, the civil servants at the DCLUP started implementing this petition. They begun by sorting out the information that had formed the base of the previous CLUP and they also evaluated the use and the deficiencies of the same in discussions with representatives from other administrative bodies. All this work was done apparently without any encouragement from the Building Committee. The politicians on the Building Committee were, therefore, somewhat surprised when they were approached by the civil servants from the DCLUP with what seemed to be an already set plan of how the civil servants intended to go about accomplishing the task of creating the new CLUP. Moreover, when the politicians on the Building Committee protested that they did not see the need for the revision of the CLUP to be quite as extensive as the civil servants' plans indicated, the civil servants simply replied that their plan included the elements that the petition from the City Executive Board called for and that were necessary according to their own evaluations. Thus, the evaluations that the civil servants made on their own accord enabled them to play an active part in the formulation of the scope when the question was finally raised in

the Building Committee. It appears, therefore, that the civil servants were a bit too influential in the beginning of the CLUP process for the input legitimacy to be ideal.

6.2.2. Throughput Legitimacy

There have been very few complaints about the CLUP process. Overall, it has been fairly inclusive. No specific kinds of actors or knowledge holders are missing (see II.2.1 and II.4.2) and there has been a lot of information to the public about how the process works and how they can participate. The public consultation period lasted between January 31 and May 1 2007 and the exhibition period will take place in spring 2008. The written comments submitted during the consultation period are addressed in the public consultation summary put together by the civil servants. The summary is 314 pages. In other words, the process has been transparent to most citizens, which is an important aspect of throughput legitimacy.

It has been harder to find information about the plan and the work process for those who do not speak Swedish, however. There are also perspectives that could have been stressed more had certain interest groups been invited to partake on the political and bureaucratic action arenas too and not just on the public one. It is obvious that most of the practical work of composing the CLUP is done on these two action arenas, whereas the interactions on the public action arena mainly serve the purpose of legitimising the plan: “The point in receiving the suggestions is that you get a mandate to keep working with these questions” (interview with project leader 2).

6.2.3. Output Legitimacy

The output legitimacy in the Swedish SEA case cannot be analysed since the adoption of the SEA will not be made until 2009.

6.3. Governance Modes and Knowledge Forms in Relation to Sustainability and Legitimacy

There is no clear correlation between governance modes and knowledge forms in this study. I will, therefore, discuss how these variables relate to the sustainability and legitimacy of the SEA separately.

6.3.1. Governance Modes and Sustainability

There is no clear indication in this case that a hierarchical governance mode hinders the development of a sustainable SEA document. On the contrary, the comprehensiveness of the SEA is at least partially due to the hierarchical governance mode through which the scope of the plan was decided. The civil servants were given directives to take social, ecological, and economic impacts of the plan into account

when evaluating it. They were also explicitly told that the evaluation needed to comply with the SEA Directive.

We will never know if the SEA would have become as comprehensive had the civil servants been free to develop it as they saw fit. The fact that their ambitions regarding the plan in general were noticeably higher than the politicians' in the beginning of the process implies that the plan, including the SEA, might have turned out even more comprehensive if the civil servants had had their way. It is also possible that they would have developed the rest of the CLUP more at the expense of the SEA, however. E.g., they may have focused more on the local plans, which they showed a greater interest in initially, but the hierarchical governance mode did not allow them to make such a priority in this case.

The inconsistencies regarding the “do nothing”-alternative cannot be related to the dominating hierarchical governance mode either. On the contrary, they may hint that the governance mode is not hierarchical enough. If the Building Committee or the people in charge at the CPO had settled on one of the possible “do nothing”-alternatives at an early stage of the work process, it is less likely that this confusion would have arisen. It was rather the network mode of the everyday work at the DCLUP that indulged this inconsistency.

The only sustainability aspect of the SEA obviously hampered by the hierarchical governance mode is the aggregation. The political decision to make the assumption of a positive economic development a prerequisite of the plan constrained the aggregation of the social and ecological perspectives. All comments regarding these perspectives were limited to solutions that would not hinder the economic growth of the region.

6.3.2. Governance Modes and Legitimacy

The hierarchical governance mode of the Swedish SEA was not strong enough to prevent the deficiency in input legitimacy in the beginning of the work process. In spite of the fact that the CPO should have waited for instructions from the Building Committee, they went ahead and started the planning process. From a legitimacy point of view, it would have been better in this case if the hierarchy between the politicians and the civil servants had been clearer.

A somewhat loose hierarchical structure is not always bad, however. It allows, e.g., for a more creative network governance mode in the practical work on the SEA, something that has contributed to high throughput legitimacy. Nobody at the DCLUP seems to feel that their superiors have assigned them tasks that they have no interest in doing, e.g.. Instead, tasks fall naturally on those in the group who are the most competent to accomplish them.

The informal contacts between the DCLUP and other local departments have also added significantly to increase the throughput legitimacy. By involving

representatives from other local departments throughout the whole SEA process, the civil servants at the DCLUP ensure that there will be a strong support in the local administration for the plan once it has been adopted and is ready to be implemented.

6.3.3. Knowledge Forms and Sustainability

The SEA is comprehensive in the sense that it takes social, ecological, and economic aspects of the CLUP into account, but it is also comprehensive in regard to the knowledge bundles included. All knowledge bundles have been represented in the work process, even though they have not been of equal importance.

The knowledge forms accumulated during the aggregation of the SEA may have been limited somewhat, though, by the segregation of the different perspectives. It is possible that there would have been more instances of reflexive knowledge, e.g., had the workshops been multidimensional instead of one-dimensional. An integrated process where all perspectives are taken into account at the same time might have produced more reflexive knowledge that could have improved the level of complexity in the analyses of the CLUP.

The separation of the perspectives also allowed the individual knowledge preferences of the civil servants to shape parts of the SEA differently. Civil servants 2 and 3, who both have business degrees, have greater faith in economic models and calculations. This is one reason why they decide to hire consultants to develop the economic part of the SEA. Civil servant 1, however, does not trust this kind of knowledge to the same extent. Instead, he stresses the importance of the institutional knowledge bundle. His experience has taught him that the professional knowledge of consultants frequently becomes useless because of their lack of institutional knowledge. They do not understand the democratic system well enough to produce an SEA that is useful to politicians, laymen, and to the public. Consequently, he prefers to gather knowledge to the social and ecological parts of the SEA through discussions with civil servants. This fragmented work process resulted in an inconsistent SEA document, in which the social, ecological, and economic parts rely on different kinds of knowledge forms aggregated through different methods.

6.3.4. Knowledge Forms and Legitimacy

One reason for the misunderstanding between the Building Committee and the civil servants at the DCLUP in the beginning of the CLUP process must have been due to a lack of institutional knowledge on the civil servants' part. Even during the interview more than a year after the event, the head of the department does not seem to understand how the politicians in the Building Committee could have questioned the initial scope of the plan suggested by civil servants. She said that the civil servants' proposal complied with the petition from the City Executive Board. She

does not seem to be aware of the fact that the Building Committee is free to make changes to this petition.

The head of the DCLUP cannot have carried out the preliminary investigation, which was made before the plan was brought up in the Building Committee, without the support of her superiors, however. The board of CPO must have been informed of what was going on at the DCLUP. This implies that there are deficiencies in the institutional knowledge bundle on several levels at the CPO, or that this knowledge was simply ignored. Either way, the lack of political back up during the initial stage of the CLUP process signifies low input legitimacy in this case.

Knowledge is also relevant for the throughput legitimacy in the Swedish SEA case. Anybody, regardless of what kind of knowledge she possesses, has been allowed to participate on the public action arena. To the bureaucratic action arena, though, only those with particular kinds of knowledge have been invited. Intimate knowledge with the suggested CLUP has been mentioned on several occasions as an important selection criterion here. Partially, because there has not been enough time to wait for comments from people who need to familiarise themselves with the material. This has resulted in a largely internal process, only including a few experts from outside the local administration. The throughput legitimacy has, therefore, not been ideal.

III. Case Study on Particulate Matter

1. CONTEXT AND CONDITIONS

1.1 Case History, Projects, Available Rules, Themes, Problems etc.

A note on case selection: The City of Gothenburg

Air quality measurements are carried out some 50 municipalities in Sweden today, but the problem of particular matters is primarily evident in the three larger cities; Stockholm, Gothenburg and Malmö, mentioned in order of its size (SEPA *Air guide* 2006:2). As we saw in figure 1, also other cities exceed the emission limits (day averages), but when we study yearly averages in regional background, we find a slightly different picture (figure 2). The south of Sweden is most affected by long-distance pollution, and we (the Swedish research team) decided that Malmö would be of lesser interest than Stockholm and Göteborg. Because of their relative sizes, we thought that there would be greater chances to find fully developed implementation processes according to the EC directives in Stockholm and Göteborg compared to any of the smaller cities or towns. Left with these two, we finally decided to choose the municipality of Gothenburg as our case, for several reasons. One drawback for Stockholm was that the new system for car-congestion fees was implemented on an experimental basis in Stockholm (January – July 2006). At the time for case selection, May 2007, there was uncertainty about what should happen with the congestion-fee reform.²⁶ From the evaluations, we know that air emissions were reduced with 10-15 percent in the central city areas, including PM₁₀, and the car-congestion tolls are now in permanent use since August 1st 2007.²⁷ But, we thought it was important to delimit this study from the wider political debate on congestion-fees as a policy tool in general and how this connects to the specific case.

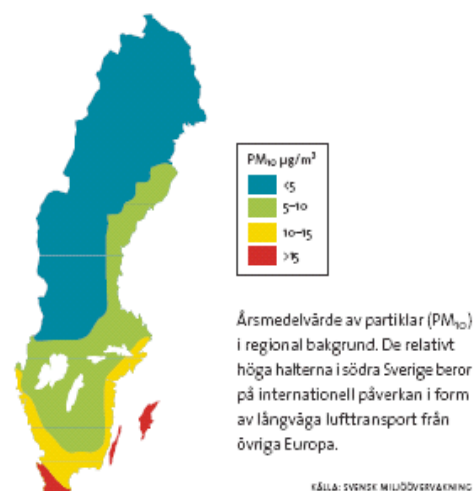


Figure 3.1. Particles PM₁₀ in air 2005 (yearly average).
Source: Svensk Miljöovervakning.

²⁶ The new right-wing government, who took place in September 2006, unexpectedly decided that the Stockholm experiment (sv. *Stockholmsförsöket*) should get permanent (see www.dn.se/DNet/jsp/polopoly.jsp?a=576839 and www.dn.se/DNet/jsp/polopoly.jsp?d=572&a=576709).

²⁷ http://www.vv.se/filer/28704/Trangselskatt_foretag_org.pdf
http://stockholmsforsoket.episerverhotell.net/upload/Rapporter/Milj%C3%B6-stadsliv/Under/Luftkvalitet%20och%20h%C3%A4lsa_slutrapport.pdf

Advantages to choose Gothenburg before Stockholm were a) the national government were not as involved with the local bargaining process here, as they obviously were in Stockholm, b) the complexity of the city management in Gothenburg was less; Gothenburg being more of a “large small town” than a capital city, such as Stockholm, and c) as the research team is based in Gothenburg, we estimated that it would enhance our possibilities to get access to the local processes.²⁸

As the reader will find out, Gothenburg will further on be treated as the primary *habitus* for the PM₁₀ implementation; but the actual *action arena* (discussion continued in section 4) for the case is hard to demarcate. What happens in the local Gothenburg *habitus* is often dependent on several other *action arenas*. Here, I will focus on to

- the national action arena (the Ministry of Environment – the Swedish Environmental Protection Agency, *SEPA* – and the County Administration in Västra Götaland)
- the local/regional collaboration in the region (GR-region and the GR Air Quality collaboration, 13 municipalities – as well as the municipality of Gothenburg, the central city with 490.000 inhabitants)

In short, the case consists of multiple layers of *action arenas*, but on the other hand we will discover that each arena is fairly narrow, with a limited number of actors or *issue-owners*. Overall, we would have detected roughly the same actors and action arenas for air quality issues in general, but delimiting ourselves to PM₁₀ makes the relevant circles even narrower.

Gothenburg – an industrial site, a harbor city, a growing economy

Since centuries, Gothenburg has been a trading and harbor city. It is the second largest city in Sweden, and it includes large industries such as Volvo, SKF and Eriksson. It went through a period of depression during the 1990s when the harbor activity decreased and several old industries closed. The two universities, Chalmers and Gothenburg Universities, have been important engines in the process of transforming the city into the knowledge society. Today, important research centers are prominent in the nearby surroundings, such as the medical company AstraZeneca in the neighboring suburb Mölndal. Still, the harbor activity is vital, being the largest

²⁸ As Göteborg also was chosen for the SEA case, we also thought that there may be some possible cross connections between these cases.

port of Scandinavia. The port is run under governmental interests, but is also organized as a company owned by the city of Gothenburg.²⁹ In collaboration with the 12 neighboring municipalities, the region plans for a growth with 60 percent until 2020.³⁰ At present, the region represents 1/10 of the Swedish economy and its growth has for the last 10 years been 1 percent above the national average.

The air qualities in Gothenburg have step by step improved since the 1970s, but still the emission level is just about the same as in Stockholm, though with half the population density. Especially in the winter time, the inversion causes the emissions to reach harmful levels (and exceed the quality norms). Even more problematic is that the air qualities hardly seem to improve any further, as the city is growing rapidly. By February 2006, the NO₂ emissions were exceeded even more times than what is accepted in a full year. By May 2006, the County Administration (sv. *Länsstyrelsen*) finally settled a *Measurement Program* for the municipality of Gothenburg; what measures need to be taken in order to reach the Environmental Quality Norms concerning PM₁₀ (as well as NO₂).

Process tracing: How did the PM₁₀ regulations “land” in the Gothenburg administration?

A systematic awareness of the air quality problems has been present among politicians and the city administrations at least since the 1980s.³¹ From 1996 and on, Gothenburg has together with Stockholm and Malmö declared an *environmental zone* for the inner city areas, meaning that commercial heavy transport has to adapt to certain rules.³² Vehicles older than 6 years are not allowed within the zone (except for Euroclass 2 and 3, they can run for 8 yrs) and clear restrictions on engine

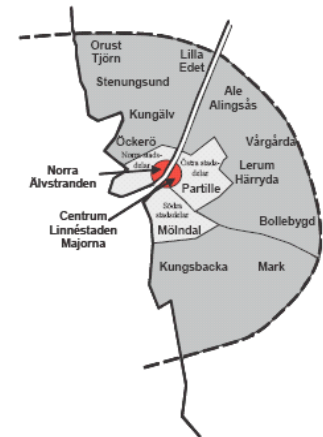


Figure 3.2 The Gothenburg Region. Source: Tillväxt Göteborgsregionen, Businessregion Gothenburg.

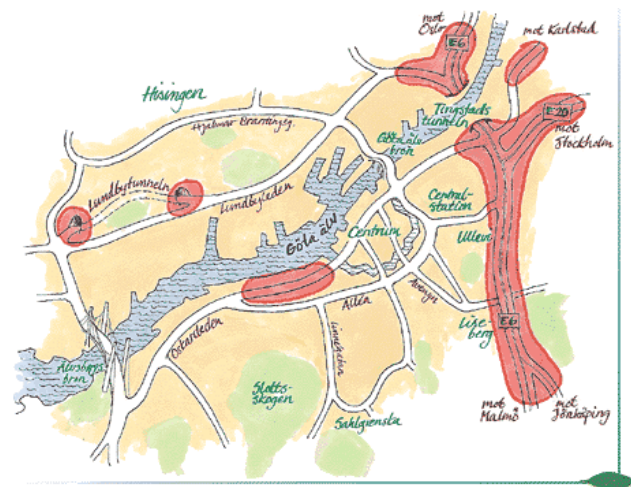


Figure 3.3. The “hot spots” of Gothenburg, where the PM₁₀ levels are exceeded.

²⁹ With *governmental interest* I mean that the judicial rules for the harbor activities are exclusively in the hands of the government. The municipal environmental inspectors have no possibility to regulate the local activities in that regard.

³⁰ <http://www.businessregion.se/ovrigt/regionensnyattillvaxtstrategi.4.24aa314e10f47fcad4c80007750.html>

³¹ By the end of the 1980s, the city of Gothenburg was claimed to be the most polluted areas in the country, by the environmental minister at the time, Birgitta Dahl.

³² According to the ordinance on road traffic (sv. *vägtrafikförordningen*, SFS 1998:1276), it is possible to set up an environmental zone in environmentally sensitive areas or in highly polluted areas.

types etc are set up, in order to stimulate innovation and the best available techniques.³³ Certified vehicles can run within the zone for longer times. The *environmental zone* is set up in close collaboration with the local business, transport companies, municipal companies, local police surveillance the practicing of the zone, and the state Road Authority etc. For the municipality itself, buses and other distribution vehicles should primarily be environmentally classified (dnr 1047/03). A wide collaboration now takes place between Gothenburg, Stockholm, Malmö, and Lund in order to enhance the use of environmental friendly vehicles, engines and fuels, in order to expand the environmental zones and to learn from past experiences in each others' cities. The implementation of the environmental zone has been evaluated, and points to a decrease in *PM particles* with roughly 1/3 or 2,7 metric ton.³⁴ Even though the *environmental zone* process does reduce the PM levels, the specific process in relation to the EC Air Quality Directive seems to follow a parallel process.

The legal framework, the EC directives as well as national legislation, put emphasis to the following aspects:

- The municipality is obliged to monitor the outdoor air qualities, including the PM_{10} levels. Measurements should be done according to described methods and models for estimation.
- The citizens should regularly be informed about the emission levels, which is done through <http://www.miljo.goteborg.se/luftnet/>
- When national authorities get reports on exceeded EQN limits, they should take action in order to establish a Measurement Program, in which appropriate actions are listed as well as responsible actors.

The PM_{10} process in Gothenburg has been closely related to these prescriptions above. PM_{10} levels have been measured in Gothenburg since 1991 (above roofs) and 1994 (street-level). The problematic areas, as depicted in Figure 4, are the endings of the Lundby-tunnel north of the river as well as the E6 highway west of the city centre. Measurements are carried out by the municipal environmental administration (sv. *Miljöförvaltningen*), the GR-collaboration which runs the Air Management Program, Air in the West (sv. *Luft i Väst*) run by the County Administration and finally the consultant agency IVL measures the PM_{10} levels on a

³³

<http://www.trafikkontoret.goteborg.se/FineToolsAPI/DownloadFile.aspx?fileid=662.pdf&filekey=a7c12016c1fa329f23c435565b786>

<http://www.trafikkontoret.goteborg.se/FineToolsAPI/DownloadFile.aspx?fileid=1005.pdf&filekey=14858a59599798b1dc73eceb81a7ea3b>

³⁴

<http://www.trafikkontoret.goteborg.se/FineToolsAPI/DownloadFile.aspx?fileid=1067.pdf&filekey=7cc24b4bfa9396fe7550fa8a230d62f3>

regular basis. The municipal environmental administration conducts the most frequent measures, and reports the results daily at the website given above (50 µg/m³ is the EQN applied here).

According to the County Administration of Västra Götaland (CA), the process to implement the Air Quality Directive started in the year 2000.³⁵ The national EQNs were not yet decided by the national parliament, but “we knew that fixed norms would come”. They also realized that the norms of NO₂ would be exceeded, and therefore the CA initiated a discussion with the municipality of Gothenburg, the Road Administration, and the regional municipal collaboration (GR-region). As the Environmental Code states that a *Measurement Program* should be established, these actors demanded the government to do so (a demand paralleled by the municipality of Stockholm). By November 2001, the government returned to the municipalities of Stockholm and Gothenburg, urging them to formulate a Measurement program, respectively. The County Administration (CA) initiated a network for dialogue that centered around Air Quality emissions in general, and they met during 2002 and 2003 in several public seminars. In June 2003, the resulting proposed Measurement Programme (sv. *Frisk luft på väg – Förslag till åtgärdsprogram för att uppfylla miljökvalitetsnormen för kvävedioxid i Göteborgsregionen*) was sent to the Ministry of Environment (M2003/1912/Mk), the issue of PM₁₀ included. The proposal was remitted between July and October 2003. The Ministry was not satisfied with all of the proposals, as several of them implied changed national legislation, measures to reduce studded tires uses (which the municipality does not have mandate to decide over). Another proposal in order to increase public commuting was that the Government should take initiatives with regional and local actors in order to solve the financing of such infra-structure investments.

In May 2004, the municipal Environmental Administration reported to the Environmental Board the PM₁₀ situation in the city of Gothenburg, concluding that the emission levels are at risk to get exceeded even after the end of 2004 (PM2004:4, 04/05/04). The document was sent to SEPA as a communiqué, but was interpreted as an official *notification* according to the Ordinance on EQNs for outdoor air (2001:527). As a consequence, the SEPA demanded the Ministry of Environment to urge the CA to produce a Measurement Program, together with local and regional actors. The CA, regional actors and the municipality thought this was an overreaction from the Government, as the measurement data was unstable and not reliable enough.

In December 2004, the Ministry of Environment established parts of the initial Measurement Program for NO₂ from 2003, including those measurements within the municipal jurisdiction and action mandate. Those measurements included *increased use of public transport, improved traffic information to the citizens and to large*

³⁵ Interview with Rolf Hammarling, 2007-03-07.

employers, parking policy restrictions, enlargement of the environmental zone for heavy traffic and measures to emphasize environmental considerations when purchasing vehicles and transportation services in the City of Gothenburg. The responsible actors were pointed out to be both municipal, regional and locally represented state actors (Region Västra Götaland, The Swedish Road Administration, municipalities in the Gothenburg region, the Swedish Tax Agency etc, M2003/1912Mk). However, these measures were not considered to be enough in order to reduce the NO₂ emissions, and therefore, in the same decision document, the County Administration was urged to produce a complementary Measurement Program for NO₂ and for Particulate Matters, at the latest by the end of 2005.

The CA representative initiated a network among municipal, regional and relevant local state actors. A similar process as in 2003 started over again. According to the CA representative, "We realized that those measurements that we discussed in 2003 are those that still relevant, we just need more of the same!"³⁶ January 18th, 2005, a dialogue meeting was held between SEPA and local/regional representatives, where local representatives pursued that a measurement program for particles was not necessary. Reasons for this were that it takes time to see the effects from measures already taken and that the measurement data was too unstable.³⁷ The SEPA on the other hand was ready to propose to the Ministry of Environment that also a Measurement Program for particles should be established.

In June, 2005, the Ministry of Environment took the decision to urge the CA to establish also a Measurement Program for Particles (M2005/3950/Mk). A proposal should be returned to the Government by April 1st 2006, and the Measurement Program for Particles should be coordinated with the

Box 3.1 Action steps of PM₁₀ in the City of Gothenburg

- 2000: initiative from the County Administration (CA) that the Government should urge them to propose a Measurement Program (pro-active, "we knew this would come up").
- 2001: In November, the Government asked the municipalities of Stockholm and Gothenburg to produce a Measurement program, respectively.
- 2003: After a series of round-table hearings and seminars, a proposal to Measurement program for NO₂ was delivered in June to the Ministry of Environment.
- 2004 (May): A report from the municipal Environmental Administration to the SEPA concludes that emission levels are at risk to be exceeded. SEPA demands the Ministry of Environment to decide that the CA must produce a Measurement Program.
- 2004 (December): The Ministry of Environment establishes parts of the NO₂ program from 2003, where responsible parts are municipal, regional and local state actors. At the same time, the urged the CA to produce a complementary Measurement Program for NO₂ by the end of 2005.
- 2005: A network was initiated by the CA for Air Quality Objectives, under the coordination of Rolf Hammarling. Regular meetings were held on a monthly basis.
- 2005 (June): The Ministry of Environment decides to urge the CA to establish a Measurement Program for Particles in Gothenburg, which should be coordinated with the Measurement for NO₂.
- 2005 (December): Decisions by the municipal Board of Traffic to adopt a proposal to a Measurement Program on Particles.
- 2006 (May): Two Measurement Programs were decided upon by the CA, one for NO₂ and one for Particular Matters. These two documents have been into effect since then.

³⁶ According to Hammarling at the County Administration of Västra Götaland (2007-03-07, also in notate 2005-09-16). From the notates from these meetings it is possible to read out that many suggestions were discussed on how to reduce emissions in general, but most proposals were discarded as they were judged to be inefficient, not within the actors' mandate, unsure administrative rules etc. One example was that stricter regulations in the Environmental zone would contradict the EC rules on competition. Possibly this restriction needs to be followed by a change in the Ordinance on Road Traffic (sv. Vägtrafikförordningen). The CA writes to the government to ask for clarification on this point.

³⁷ In 2005, the particle emissions were exceeded only at the spots *Gårda*, where the measuring instruments are placed close to the E6-highway, a place people normally don't visit or visit only for short moments. Local actors claim that the choice of place contradicts the instructions from the SEPA on recommended placement for measuring equipment.

Measurement Program for NO₂. By May 19th 2006, the CA finally decided upon the two Measurement Programs for NO₂ and Particles, respectively. According to the CA representative, these Measurement Programs were formulated and anchored in the municipal Traffic Administration in 2005, and further also in the Board of Traffic of the city of Gothenburg (dnr 2253/04). These Programs came to become the CA proposal in the spring of 2006. What was added into the new NO₂ Program, in relation to what was decided already in December 2004, were the following Measures:

- That the Västra Götaland region and the Swedish Road Administration investigates the possibility to incorporate bus lanes at certain road sections [which increases the attractiveness of public transport commuting in areas with heavy traffic congestion]
- That the city of Gothenburg investigates how the public transport can be more passable in the central areas of the City
- That the municipality of Gothenburg should increase informative efforts among households and large companies concerning travelling habits. They should also apply for campaigning resources
- That the Swedish Road Administration, the City of Gothenburg and the local public transport company (sv. *Västtrafik*) should intensify work within the project “*New Traffic Habits*” (sv. *Nya vägvanor*) and it should also be expanded to neighboring municipalities
- The City of Gothenburg, the Swedish Road Administration and *Västtrafik* should launch a car-pool service connected to the local public transport system
- That the car parking policies are revised by the City of Gothenburg and *Västtrafik* in several aspects [commuter car parkings should be expanded and safety arrangements in connection to these should get improved; visitors’ car parkings in the city centre should not increase; the parking norms for residents should be revised; the fee systems for car parking should support the ambitions to reduce cars coming into the city centre]
- That the Swedish Tax authority should pay closer attention to the tax privilege that pre-paid car parks are, which should be reported on yearly tax records
- That the public purchasing routines for work machines³⁸ are coordinated between the City of Gothenburg, the Swedish Road Administration, the Swedish Rail Administration as well as the municipalities of Mölndal and Partille
- Those local state authorities should demand environmental vehicles as far as possible when purchasing transportation services of persons.

³⁸ Best available technology should be applied when purchasing trucks, buses and various heavy transportation means.

The suggested measures in order to reduce the particles, taken by the Board of Traffic for the City of Gothenburg (2005-12-15), and that finally also were included in the CA Measurement Program on Particles, were leaner, compared to the NO₂ measures agreed. Though being aware that the two programs are closely related, we also notice that the NO₂ measures are directed towards a wide group of actors, while the Particles Measures only concerns measures taken by one single actor, the City of Gothenburg. The four suggested Measures in order to reduce the Particles are:

- To start an investigation on reducing car speed at specially exposed streets [Sprängkullsgatan, Per Dubbsgatan and Friggagatan]
- That the Traffic Administration should inform the citizens about the less use of studded tires, and that the municipal administration themselves should not use studded tires, as a standard
- Spring cleaning of the ten mostly exposed streets between February and April
- Road dust fixation by CMA-solution when emission exceeding is at risk at the 3 – 5 mostly exposed streets.³⁹

In order to briefly summarize how the PM₁₀ regulations “landed” in the Gothenburg administration, we can through the described process-tracing and the supporting documents and interviews, draw a number of short conclusions. These will be elaborated in further detail further later on in this report.

- ✓ A first conclusion is that the PM₁₀ process primarily has involved public administration officials throughout the process from 2003 until 2006. To a lesser extent representatives for public companies, such as *Västrafik* has also participated in the process, and even less purely private companies. Local associations and NGOs have been almost entirely absent, and media reporting have exclusively reported from the administrative process to the citizens. Media reporting has never channeled public dissatisfaction into the process.

³⁹ One study by the Environmental Administration in Gothenburg found a decrease in particles by 22 – 33 percent after CMA-treatment, with effects lasting a few days up to a week. See further Göteborgs Stad, Miljö, 2006:3 or

www.vv.se/fud-resultat/Publikationer_000301_000400/Publikation_000363/Uppdragsrapport%202006-3%20-%20Effekter%20p%a5%20partikelhalten%20av%20CMA-spridning%20och%20sopning.pdf.

Few scientific studies are found on the effects of CMA-use in order to decrease particles. A few studies found are: www.vti.se/EPiBrowser/Publikationer%20-%20English/R521Eng.pdf as well as Norman A. & Johansson, C. (2006), *Studies on measures to reduce road dust emissions from paved roads in Scandinavia*, Atmospheric Environment 40 (6154 – 6164).

- ✓ The second conclusion is that the administrative process has to a large extent fulfilled the ambition to measure the level of PM emissions and to provide information and documentation on registered data. To a lesser extent it has been possible to identify Measurements that correspond to the sources.
- ✓ Thirdly, and maybe most interesting, is that most actors agree that studded tyres are the primary source of particulate emissions. Due to a law change in 1999, regulations stated increased use of studded tires in the snowy winter-season (between October 1st and April 30th). Increased safety in terms of lesser accidents from slippery roads here stands against the principle of decreased PM₁₀ emissions, as particles increase when people use studded tires on dry roads. Also, the mandate to influence people's use of studded tyres is problematic for municipal actors; it is limited to the use of *informative* steering tools.
- ✓ Fourth, the potential conflict dimensions between public – civil society actors, between civil servants within various municipal agencies, or between administrative – political agents have not been active in this case. The primary conflict dimension is between state – municipal public actors, as local actors perceive the EQNs to threaten the municipal 'independence', (sv. *kommunalt självstyre*). Restrictions are imposed on to the municipalities, but the necessary resources or steering tools does not follow.
- ✓ Fifth, it is somewhat surprising how strictly administrative the PM process have proceeded, in a fairly narrow and formalized way. Possibly this mirrors the expectations from the legal framework, but it also has the consequence that the PM issue is treated rather separate from other 'big' issues that takes the focus of the municipal politicians, such as the issue of the Environmental zone, the future K2020 infra-structure planning process as well as the HUR 2050 process (the two latter dealing with long-term infrastructure issues).
- ✓ And sixth, still, even with a limited local mandate, a learning process between the administrative levels has taken place throughout the process. More elaborated Measurements are decided upon in 2006 compared to earlier in the process, and an awareness of attention to the EQNs has been woven into other processes. The actors involved at various levels have a more nuanced understanding of what measures are within their scope in 2006, compared with how they understood the situation in 2003.

2. IDENTIFYING CASE SPECIFIC GOVERNANCE ARRANGEMENTS

This section discusses the various governance arrangements found in the PM10 case of Gothenburg. The discussion originates from the works of Kooiman 2003 (first, second and third order of governance) as well as instructions in “The Topic Guide”. The reader should be aware that judgments on relative weights on governance arrangements depend on where you stand, whether the origin is the specific EU directives on Particulate Matters and its implementation in Gothenburg; or whether the origin is the overall measures taken in the City of Gothenburg in order to reduce emission quantities from traffic. The first is oriented at emission levels at various “hot spots”, the second focuses at the overall emission situation in the greater city of Gothenburg. In the following, the author has chosen to base the discussion on the specific implementation process of the regulation and activities encircling the PM₁₀ regulations.

2.1 Governace Modes/ Governance Arrangements

When looking at the implementation of the EU Air Quality Directive into the Swedish context, it becomes clear from both interview material and the documentation on the case, that the legal framework at all levels (EU, national, regional and municipal) is first and foremost a *hierarchical governance mode*. This mode is primarily defined by the regulative framework itself, and no other competing governance structure has claimed attention or influence on the PM₁₀ problematique in the Swedish case. The whole issue is fully governed and owned by public administrative and political actors in a multi-level manner. There is arguing taking place, but within the administrative multi-level hierarchy.

Table 2.1 Governance modes at the ‘first order governing’ (local/enterprise) level

		<i>Governance modes</i>			
Sweden		<i>market</i>	<i>hierarchy</i>	<i>bargaining</i>	<i>arguing</i>
Case: Gothenburg	PM ₁₀	0	4	0	1

Source: Topic Guide, Annex 3. 4=Dominant governance mode; 1 – 3= less relevant; 0=not relevant at all.

In first-order governance, governing actors try to tackle problems or create opportunities on a day-to-day basis (Kooiman 2003:135). For the case of traffic pollution in Gothenburg, one interesting aspect has to do with the process of *problem definition*. That PM₁₀ levels exceeded the nationally set norms were *not seen as a problem* by the local actors in 2004 and onwards. At several occasions the following facts were pursued⁴⁰:

⁴⁰ See Mk 2005/3950/Mk, 2005-06-30, and Measurement Program for Particulate Matters (may 2006). Also interview with Rolf Hammarling (CA) and Anders Roth (Local Traffic Office).

- The national norm were *lower* than the EU norm
- The communiqué sent to SEPA in 2004 did state that Gothenburg were *at risk* of exceeding the EQNs, but that measuring data were too unstable
- Measuring data were too unstable, due to a) short measuring span, b) great local variation due to weather volatility, c) it took long time for SEPA to issue guidelines on different measuring methods
- Several measures were already taken in relation to the *Environmental zone*, and local actors wanted to await evaluation results from these activities;

However, national actors, in particular the SEPA, regarded the exceeded limits as a serious problem, which were at threat to continue being a problem the next coming years. Therefore, these actors were eager to follow up with the Measurement Program recommended by the legal framework. In sum, local and national actors had different perceptions of the *problem definition* in the case of PM₁₀. Therefore, the case also displays problems in matching *possible solutions* to the perceived problem or situation.

Both municipal and national actors agreed to a great extent that a great bulk of the PM₁₀ emissions originated from the car traffic with studded tyres. Possible measures to effectively deal with this problem were also pointed out in the firstly proposed Measurement Program for NO₂ in 2003 (Dnr 2001/2250/R). These included judicial measures, economic fees and informative methods. The governmental response proved to be sour; the municipality of Gothenburg should not propose actions outside of their jurisdiction. Later proposed measurements have primarily dealt with ‘softer’ (informative) solutions, but possibly with limited chances to actually affect the problem.

Concerning the *second order of governing*, relating to institutional settings and policy programs, we find that the PM₁₀ issue is governed in parallel to several other governing processes, or “partial regimes” (Heinelt 2002; Schmitter 1993). In the City of Gothenburg, the following processes are judged to be the *primary parallel regimes*, that to a great extent outcompetes the single issue of particulate matters;

- The Environmental Zone, a collaborative initiative between the cities of Stockholm, Gothenburg, Malmö and Lund, initiated in 1996
- K2020, a visionary collaboration between the city of Gothenburg and its neighboring municipalities about the future infrastructure system in the region. Also connected to the project *Sustainable Growth*, within the framework of the collaboration of the 13 Gothenburg region municipalities. A similar project is HUR 2050, discussing regional infrastructure problems together with national agencies located in the region.⁴¹

⁴¹ <http://www.gr.to/grinnehallsmeny/miljosamhallsbyggnad/uthalligtillvaxt>

- The Environmental Program for Gothenburg transport, a long-term visionary document which will provide the guiding ground for the municipal Traffic office in the next coming years.

These parallel regimes generally bear more legitimacy among the local politicians and policymakers, “it is within these processes the action is”, but they have also to some extent been affected by the PM₁₀ issue initiated from national and EU authorities.

2.2 Rules In Use/ Institutional Context (Conceptual Framework p. 28-31)

The legal framework does to a very large extent define the problem and the solution in the PM₁₀ case. The legal quality norm tool was introduced to the Swedish judicial system by the entrance into the EU; earlier judicial rules relied to a great extent on relative judgments where local economic, social and ecological considerations were weighted against each other. This was often done in a local context, where central authorities and/or courts to a large extent listened to the deliberative judgments from municipal actors. The binding EQNs from the EU legislative tradition therefore represented *a new type of authority rule* into the Swedish polity.

One constitutional aspect that plays into the PM story, is that the Swedish/Scandinavian tradition of local municipal independence (sv. *kommunalt självstyre*) makes it complicated for the central level to tell the municipal level what to do – especially if no positive or negative incentives will follow. The national level can legislate obligatory tasks for the municipal level (schooling, elderly care, social care) but also has to follow up with financial resources. Or, the national level can tell the municipal that “if you don’t do X, Y will follow”. In the PM case, or the case of the implementation of the Air Quality Directive, neither are there clear sanctions what will follow if exceeded limits cannot be reduced, nor follows any resources or incentives to achieve such reductions. Therefore, the City Mayor can say “the County Administration cannot tell us what to do”, as the CA is seen more as a consultative partner, and if possible a way to dig out resources, than as a police officer watching what considerations and activities the municipalities may undertake.

Authority rules: The Swedish version of the Air Quality Directive is the Ordinance on Environmental Quality Norms on Outdoor Air (2001:527). It states that when an air quality norm is exceeded in an area with 250.000 inhabitants or larger, it is the national SEPA agency that investigates the need of a Measurement Program, (MP). If an MP is desired, it is up to the Government, or in reality the Ministry of Environment, to take the decision to set up a MP. They can also delegate to a lower authority (the County Administration or a municipality) to set up an MP, that later should be approved by the Government. All actors that are affected by a

MP should be given the opportunity to react on it in a consultative process of at least two months. It is quite clear, though, that the governmental level has the last word in this process. It should also be mentioned that the municipality of Gothenburg experienced the process of formulating the NO₂ Measurement Program in negative terms, which also colored the following PM process.

Boundary rules: The Environmental Code primarily points out the municipality or the (public) authorities as the Government decides as the addressees for a Measurement Program, while other actors are (assumed) to be consultees (market actors, civil society actors). Therefore, it is not surprising that the PM process in Gothenburg to a large extent has been limited to an on-going round table discussion between representatives for the CA as from the City of Gothenburg. The formulation of the Environmental Code in air quality matters implicitly excludes non-experts from the relevant bargaining processes.

Scope rules: The Scope Rules of the Environmental Code and the Ordinance on Environmental Quality Norms on Outdoor Air is basically that the municipalities shall a) measure the emissions, b) inform the citizens about continuing emission levels, and c) implement decided Measurement Programs. No further obligations or sanctions are stated by the judicial framework.

2.2.1 Absent actors

Actors that potentially could have taken an active part in the PM process, or been invited to it, would be local NGOs, local residents (especially at ‘hot-spot’ areas), academics from the two universities, and representatives for the port. The NGOs could well have been represented by health interests, associations for allergies or asthma diseases, but no such interests have been found. This supports the conclusion that the Gothenburg PM process has been tightly in the hands of a few persons at the political and administrative levels of the city of Gothenburg, and the issue has a low profile character.

2.3 Changes (General Framework p. 34)

In short, no substantial changes of the rules have taken place since the EQN on Air were introduced into the Swedish context. What can be said here is that the implementation at the national level started out with great uncertainty; where a car-congestion system was under establishment in Stockholm, with the help from the political bargaining-process in the Government at the time, while this option was out-defined in the context of Gothenburg. In relation to Gothenburg, the SEPA was strictly “reading the books”, while in relation to Stockholm greater powers were moving and the SEPA were superseded. While the SEPA seems to have expected a clear action plan in return from the city of Gothenburg, they received a list of

precautions that probably would affect the PM situation, but where several measures including the Government itself. This was probably not expected or predicted in the judicial pre-work, but pointed to the fact that in order to tackle PM emissions, there could be necessary to change some laws, change economic fees and taxes and also point out the responsibility of national agencies. In 2004, the Government reaction to these suggestions were quite hesitant and dissociative, but in 2006 and 2007 a softening up took place. The municipality did accept the tools suggested by the Government, primarily involving stricter purchasing policies, and the state took several judicial modifications suggested by the city of Gothenburg into consideration.⁴²

3. IDENTIFYING THE CASE SPECIFIC KNOWLEDGESCAPES

Knowledge is one of the key concepts under investigation in this G-FORS program. The central interest lies with the discovery of linking constellations between various governance arrangements and various knowledge forms that make learning and the emergence of reflective knowledge likely (Nullmeier 2006:9). Recent scientific discussions has developed the notion on how various knowledge forms plays into other processes in society, not least the political. Earlier conceptions of knowledge states that the universities produce knowledge that later on are applied into various social arenas (Mode 1), while later conceptions find knowledge production and use more trans-disciplinary, reflexive, dialogic and originating from local sources as well as universities, partnership arrangements (f ex. *triple helix*), lay men experiences and so on (Gibbons et al 1994; Nowotny et al 2001). But knowledge also seems to form various knowledge domains or knowledge universes, where Mathiesen has proposed the concept of *KnowledgeScapes* (Mathiesen 2005). Building on earlier researchers, he develops the *the IRS –Flower of Knowledge Forms*, sorting out eight various forms of knowledge landscapes;

- Scientific/expert/professional knowledge (bundle 1)
- Steering/institutional/economic knowledge (bundle 2)
- Everyday/milieu/local knowledge (bundle 3)
- Reflective knowledge (in weak as well as strong forms)

⁴² www.nyalagar.nu/index.php

3.1 Dominant Knowledge Forms: Content/Claims of Knowledge Forms

Steering knowledge is the dominant knowledge form expressed at the local/municipal level. Even though other knowledge forms exist, they only play into the PM process *under the condition of* the formal judicial steering exercised by national authorities.

At the national level, two knowledge forms are equally dominant. Both judicial/administrative knowledge is profound in the form of the EU Air Quality directive (with daughter directives), as well as continuing references to scientific reports. Examples here are risk assessments by the Institute of Environmental Medicine (IMM) at the medical university of Karolinska in Stockholm, Environmental Medical Section at the Department of Public Health Sciences (MME, also at Karolinska), Department of Occupational & Environmental Medicine at Umeå University, The Environmental Medical Centre (VMC) at Sahlgrenska University Hospital in Gothenburg as well as state agencies such as The National Board of Health and Welfare⁴³ (sv. *Socialstyrelsen*) and The National Institute of Economic Research⁴⁴ (sv. *Konjunkturinstitutet*). These actors represent the early references in the process (2000-2004), while other knowledge producers have entered the process in a later stage, around 2005 and on. Examples of such late-comers are Department of Applied Environmental Science at Stockholm University and The Swedish National Road and Transport Research Institute (VTI).⁴⁵ All of these, the early-ons as well as the late-comers, make references to the WHO reports on air quality effects, which first appeared in 1987.⁴⁶

Table 3.1 summarizes the active *KnowledgeScapes* in the PM₁₀ case in Sweden, primarily based on literature searches, document studies and newspaper articles with relevant material at local and national levels.

⁴³ <http://www.sos.se/FULLTEXT/111/2001-111-1/sammanfattning.htm>

⁴⁴

http://www.konj.se/download/18.1a01f911006c9df6dc800019969/v%C3%A4rdering+av+h%C3%A4lsoeffekter+fr%C3%A5n+luft%C3%B6roreningar_1.pdf

⁴⁵ http://www.vti.se/templates/ReportSearch___2794.aspx?to=2015-12-31 (general list of reports)

<http://www.vti.se/EPiBrowser/Publikationer%20-%20English/R521Eng.pdf> (2005)

<http://www.vti.se/EPiBrowser/Publikationer%20-%20English/N7-2007Eng.pdf> (2007)

⁴⁶ http://www.who.int/phe/health_topics/outdoorair_aqg/en/index.html

Table 3.1 Dominant knowledge forms at first and second orders of governing

Knowledge forms at the *first order governing level (local)*

Country	Case	Bundle 1: Scientific, expert & professional			Bundle 2: Steering, institutional & economic			Bundle 3: Everyday, milieu & local				Reflexive	
		Science, research & expert domain	Expert, scientific, Professional knowledge	Product knowledge	Policy & governance domain	Steering, management knowledge	Institutional knowledge	Market, economy knowledge	Life-world domain	Every day knowledge	Milieu knowledge	Local knowledge	Reflexive knowledge
S	PM10	2	X	-	3	X	X	-	1	0	X	X	X

Knowledge forms at the *second order governing level (national)*

Gothenburg	2	X	-	2	X	X	-	1	-	X	X	X
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Comments: 3=Dominant knowledge forms, 2 or 1=Less relevant knowledge forms, 0=Not relevant at all. X=Specified knowledge forms that can be observed, including reflexive knowledge. For definitions of various knowledge forms and knowledge bundles, see Matthiesen 2005.

Interestingly, the *Science and Research domain* seemed initially to be referred to by the national level to legitimize their hierarchical governing/steering of the local level. Then, the local level responded with referring to even more research (primarily international)

3.2 Knowledge Holders

The knowledge forms discussed in the previous section is withheld by various *knowledge holders*. At the local level, it is very obvious that the local administrative staff at the Traffic Office as well as the Environmental Office at the City of Gothenburg, are both very familiar with the EU Air Quality Directive as well as with related national and international research and experiences from other cities.⁴⁷ This situation may not be representative for all Swedish municipal bureaucrats, however. We should keep in mind that the City of Gothenburg promotes an image of itself as very front-forward in environmental planning and environmental endeavour; even though other business and commercial considerations also are vital. Therefore, the City either attracts bureaucrats with high environmental interest, and/or such persons are promoted through recruiting processes and consequently given reasonable action space. For example, several of the key persons interviewed have adequate university degrees and some even have research experience. In a more average town, the

⁴⁷ Examples of such reports are case studies with experiences from car congestion tolls in Oslo and Bergen. The city of Gothenburg is a partner within the TELLUS project, see http://www.fav.de/Pro_TELLUS.html

corresponding persons would not be as active as consumers of scientific reports and related material.

Expert and professional knowledge can be related to in several ways. One way that was very profound early in the period (2000-2004) was to measure the PM levels, including establishing which the appropriate measuring spots were as well as the recommended measuring methods. Even up to today, we can conclude that the professional knowledge relating to the Environmental Office, the GR-collaboration and the consultats IVL all relates to measurement activities and scientific argumentation on the proper way to measure. Only the Environmental Office is partly also involved in discussions on proper measurements.

Private business is involved to a very low degree, but they are indirectly linked to the GR-collaboration. Within the framework of the Local Environmental Traffic zone, we also find participation by West Traffic (sv. *Västtrafik*) and representatives for local small transport companies.

Several knowledge holders from the university have been involved in the process, but rather on a national mandate than a local. At the department of Law, we find Doc. Lena Gipperth who has evaluated the Measurement Programs and who recommends number of changes with relation to the Air Quality Norms (SOU 2005:113).⁴⁸ The municipality has invited her as a discussion partner, but they are skeptical about her suggestions; possibly those would increase the burden for their part.

⁴⁸ <http://www.regeringen.se/sb/d/108/a/55874>

Until now, the Measurement Programs has primarily been about gathering local actors to suggest possible measures, she suggest that it shall be possible to force private persons (car drivers) and private companies to respond to measures. She also suggests that private actors shall be assured the right to appeal against overdrawn AQNs.

Table 3.2 Knowledge holders at first and second orders of governing

Knowledge forms at the *first order governing level (local)*

Knowledge holders ↓	Bundle 1: Scientific, expert & professional			Bundle 2: Steering, institutional & economic			Bundle 3: Everyday, milieu & local				Reflexive	
	Science, research & expert domain	Expert, scientific, Professional knowledge	Product knowledge	Policy & governance domain	Steering, management knowledge	Institutional knowledge	Market, economy knowledge	Life-world domain	Every day knowledge	Milieu knowledge	Local knowledge	Reflexive knowledge
	2	X	-	3	X	X	-	1	0	X	X	X
City of Gothenburg												
The regional municipal collaboration (GR-region)												
Private business												
IVL, local consultants												
University of Gothenburg												
Green Motorists (NGO)												
The Gothenburg Post (local media)												

Knowledge forms at the *second order governing level (national)*

	2	X	-	2	X	X	-	1	-	X	X	X
The Government/ Ministry of Environment Swedish Environmental Protection Agency, SEPA												
The National Road Administration County												
Administration of Västra Götaland												
University institutes in Stockholm, Umeå												

Comments: 3=Dominant knowledge forms, 2 or 1=Less relevant knowledge forms, 0=Not relevant at all. X=Specified knowledge forms that can be observed, including reflexive knowledge. For definitions of various knowledge forms and knowledge bundles, see Matthiesen 2005.

All in all, at the local level, the local knowledge dominates the taken measures, the agenda formation and the relation to the demands coming from the national actors (SEPA and the Ministry of Environment). At the national level, steering and institutional knowledge dominates, implicitly or expressively leaning on scientific knowledge or steering knowledge from the EU.

3.3 Social/Spatial Distribution of Knowledge

Which are the main conflict lines between the knowledge bundles described in section 3.2? The primary conflict line referred to by the actors at the national level is that the local actors *don't comply* with the imposed rules. At the local level, the bottom line is that local actors *don't have the appropriate tools* in order to change the course of PM pollutants development, neither in financial, judicial or political terms. To conclude, there is a lack of reciprocal and pragmatic communication between the national level and the municipal, at least during the process 2000 – 2006. Lately, a more open dialogue seems to have opened up.⁴⁹ In spatial terms, this could also be interpreted as a conflict dimension between the centrally organized power of the capital city, and the local knowledge of the municipality of Gothenburg. The central/national authorities lean more to their regulative powers, while the local/municipal actors lean to 'what really is possible and reasonable in the local context'. With this means that the municipality has an overall responsibility for the welfare of its citizens, the local economic development course and that the PM issue must be related to all other responsibilities that the municipality have.

Socially, the knowledge distribution in the PM case is very narrow. It is primarily limited to expert competence and a few politicians at the administrative bureaus of the City, the County Administration, national administrative and political bodies in charge as well as a few consultants.

3.4 Excluded/Silent Knowledge

Potential knowledge forms that are excluded from the local PM process are the following:

- Knowledge about health effects, absence of local medical studies as well as no voices raised from ex asthmatic patient organizations
- Research at these topics at the two universities, Chalmers University (technical) and University of Gothenburg (medical, judicial, chemical etc) are almost totally absent from the process
- The wider citizenry of Gothenburg is assumed to have very limited knowledge on the PM issues, apart from what is reported in the local news. Air Quality issues doesn't engage any opinion movements, nor does it have any political pay-offs – rather the opposite, as the majority prefers no limits on car use,

⁴⁹ For example, law changes on studded car tyre regulations that were suggested already in 2003 have lately gained an ear. Several similar suggestions are collected at the webpage <http://www.nyalagar.nu/>. This website also communicates suggestions on reformed regulation on commuter policies, to equalise policies between various transportation means and to give municipalities the rights to ask larger companies for transportation plans.

no restrictions on traffic flows and they think that much has been achieved already in terms of air qualities (compared to the 1970s).

3.5 Relevance of Reflective Knowledge

Throughout the studied period, reflective knowledge has indeed occurred at both action arenas (the local and the national), to a medium extent. After the first NO₂ Action Plan of June 2003, a dead-lock appeared between the national and local levels. The local level had suggested a number of measures that needed to be considered in order to reduce emissions in the region, but the Ministry of Environment was quite harsh, responding that the municipality of Gothenburg and the surrounding partnership municipalities (the GR-region) should not suggest measures that were not within their local mandate. This response made the local actors quite sour; they had expected a dialogue with the state on how resources could be directed to the region in order to fulfill well needed investments, or at least to discuss possible law changes that were needed in order to reach the Air Quality ambitions.⁵⁰

However, when the government decided to get back to the municipality to set up a Measurement Program for Particles in 2005 (finally agreed in May 2006), it was a much leaner Program than what was suggested by the Municipality/GR-region itself back in 2003. In fact, most of the suggested measures were already into effect! The PM Measurement Program discusses a number of *potential* measures, but underlines that several of these measures are not within their reach but requires national decisions. The PM Measurement Program also lists four measures decided by the local Traffic Authority, which are within reach for the local policy actors. These measures are

- To investigate what lowered traffic speeds would result in at the “hot-spot” streets;
- To inform the citizens on the advantage of decreased use of studded tires. Also the municipality itself uses non-studded tires as a standard;
- To clean the 10 most problematic streets regularly from February to April;
- Particle gluing by a CMA-solution at the 3-5 most problematic streets.

Only by looking at these documents and talking to interviewees about the specific PM process results in a conclusion that very little learning has taken place at all among the actors and between the two arenas. But a closer look brings out a slightly different picture.

⁵⁰ In April 2004, a number of local representatives even went to Stockholm to discuss these matters with the Ministry of Finance, the Ministry of Business and the Ministry of Environment.

At the national level, we find the *Committee for Climate Policy* (M 2007:03) who investigates the overarching Swedish Climate Policy, to later be suggested as a law proposal. Here, we find several of the suggestions raised from the municipality of Gothenburg (SOU 2008:24). For example, are tax reductions suggested to be equalized for all types of transport means, being dependent on commuting distances. The present tax reduction system favors commuting by car. This is one tiny example on how learning has occurred at the national level, even though to a limited extent.

At the local level it is easier to find examples of reflective knowledge. In the Environmental Plan for Traffic in Gothenburg (report 2006:4, Traffic Office), we find a general description on aims with the program, where fulfilling the Environmental Quality Norms for particles and NO₂ is one. A number of measures are described and discussed, where focus is directed to:

- a) Travel habits
 - * Infrastructure & planning
 - * Services such as car-sharing, a green travel-card etc
 - * Economy, laws and policies
 - * Communication such as debate articles, campaignsand directly towards households
- b) Transportation of goods in Environmental zone
 - * Related to transport logistics within the
- c) Technical development
 - * Related to the Environmental zone and the vehicles used by the city itself, or its businesses
- d) Protecting & economizing
 - * Reducing material use, land use, vibrations, noise & possible redirection of traffic.

Several of these measures will probably reduce PM levels in the city, but this plan is primarily a document for intended action, not yet implemented. Interestingly, the particular matter issue is at the head of the city administrators and the Traffic Board, being aware that this issue needs to be connected to the larger traffic planning of the city and of the region, as well as the larger planning processes as well. These issues are connected to the work K 2020 – Public Transport in 2020⁵¹, as well as to HUR 2050 – A regional network dealing with communication development in the region

⁵¹

<http://www.gr.to/grinnehallsmeny/miljosamhallsbyggnad/projekt/k2020.4.c2226e31133de9a9838000701.html>

until 2050.⁵² These networks and processes are partnerships that the city of Gothenburg is an active partner of, but the city cannot finally decide over the outcomes from these collaborations. It is striking how related various suggested measures are to the PM issue, but the PM issue is so tiny in the shadow of these “big bundles” of issues such as regional planning, transportation, public transport planning as well as the traffic zone. Nevertheless, the PM issue is formally handled besides of the “bundle problems”, but it pops up here and there in these documents, as a known fact. In other cities the traffic zone would possibly connect much clearer to the PM issue, but in Gothenburg they are parallel processes. However, the PM issue is visible in these larger documents, which it wasn't at the beginning of the 2000s. This is explained by the same people and individuals that are active in various governing structures, some with larger political weight and some with lighter. The PM issue with its Measurement Program and the institutional structure (regime) surrounding it, clearly belong to the lighter political issues.

Another trace of local reflective knowledge is that car congestion tolls are under political discussion again. For a long period of time, both the major right and left wing parties have agreed that traffic tolls are not under consideration. But during the spring of 2008, several signals have appeared that it should be of interest to investigate the issue further, but no decision is taken so far.

Maybe the most important learning process has taken place within the media. From not having carried out any systematic searches, it is obvious that the media reports about hazardous emission levels much more often today than only a few years ago, both in Gothenburg and in national media. In the aftermath of the car congestion toll debate in Stockholm, an increased awareness has occurred that reduced traffic levels also carries positive results, where lower emissions is one such.

Taken together, the reflective knowledge is limited, but I would say it is much larger than you think from strictly studying the formal PM process. As we deal with human persons and officers working on a daily basis with both PM issues, environmental sustainability and the overall development of the city of Göteborg, these persons can walk into tables and processes, and they walk out of them too. Wherever they walk, contagion effects occur. Process after process is affected by the PM regime, even though not in formalistic terms. Awareness has been planted that “we cannot continue with those particles”, but the measures suggested needs to be negotiated through other processes than what the Air Quality Directive prescribes.

⁵²

<http://www.gr.to/grinnehallsmeny/miljosamhallsbyggnad/projekt/hur2050.4.5edf71c21132ea5763e8000610.html>

4. THE ACTION ARENAS

4.1 Involved Actors: Holders – their Resources and Roles

The table below maps out the various relevant actors in the two Action Arenas related to the PM case in Gothenburg (adding on to the discussion on *process tracing* in section one, Context and conditions). In general terms, these are the most clearly defined actors in the national and local action arenas, respectively. It would be possible to detect even further actors that one way or the other has had a word in the process, but these listed below are clearly those who have maintained the PM process in its various stages.

Table 3.3 Who are involved, on what conditions and with what resources

National level		
Actor(s)	Conditions	Resources
The Government & The Ministry of Environment	Political, implementing AQ Directive into Swedish law	Legislative, authoritative
Swedish Environmental Protection Agency, (SEPA) helena.sabelstrom@naturvardsverket.se	Administrative body executing Swedish/EU law	Authoritative, consultative
County Administration of Västra Götaland, rolf.hammarling@o.lst.se	Regional surveillance of national interests	Dialogue
Swedish Road Administration (Vägverket)	Regional 'owner' of major roads	Administrative, can set speed limits etc
IVL, Swedish Environmental Institute	Consultants for SEPA	Competence, measures AQ in some 60 places around the country
Municipal level		
Actor(s)	Conditions	Resources
Board of City Building Board of Environment Board of Traffic	Take political decisions on delegation from the City Council	Political
Local Government Administration Henriette.Soderberg@goteborg.se	Coordinates the policies of the city, administrative body	Political executive, dialogue, centrality
Environmental Office Traffic Office Office of City Building & Planning	Administrative, prepares policies for the politicians in the boards or the city council	Administrative & competence
GR-regionens luftvårdsprogram (the Air Management Program in the GR-region) Pernilla.Hellstrom@miljo.goteborg.se http://www2.gr.to/luftvardsprogrammet	Map the AQ conditions in the region, estimate and inform about health- & environmental effects, produce recommendations to planning & policy processes	Deliver measurement results, close consultation with deciding interests (regional politicians, CA representatives, business representatives)
Luft i Väst (Air in the West) liv@vanersborg.se	Municipal collaboration in order to measure and	Delivers measurement results

http://liv.vg	document air qualities	
Local interest organizations (selected)⁵³		
Gröna bilister (Green cardrivers) www.gronabilister.se	National lobby organization, about 1.000 members (acting in the local arena)	Two refer responses, 2005-11-04 2006-03-01
Businessregion Gothenburg AB	Promoting local business	2006-03-14
Gothenburg Energy	The local energy company	2006-03-16
Göteborgs miljövetenskapliga centrum	Represents the two universities	DNR GMV 2006/10
Göteborgsregionens kommunalförbund	The GR-partnership	2006-03-16
Västrafik (Traffic in the West)	The regional traffic company	2006-03-14

At the national level, political interests referred to as ‘the Government’ in documents, but that in reality are represented by the Ministry of Environment, have dominated the national arena together with its close allied, the SEPA. Together, these bodies have been very close to the EU AQ Directive, trying to enforce local response and obedience as close to the EU intentions as possible. The County Administration has proved the most interesting role throughout this process; initially they more or less reflected the local opinions (from a well-founded deliberative discussion with various actors) upwards to the decision-makers in Stockholm. Later in the process, 2005-06, the CAs role became much more the regional tool of the state-level, i. e. errand-boy of the government. A measurement program was finally agreed upon, but with a watered down content. The Road administration in the region has kept a low profile in the process as they basically are defined by the AQ regime as consultative partners. The IVL finally, is basically engaged in measuring PM data with methods defined by the SEPA as correct; they deliver this information to the SEPA and play a very limited role in the policy process.

At the municipal level, the political level of the city of Gothenburg plays the most dominant role, together with the administrative level. The political level comes first and foremost, but also, one need to know that the second largest city of the country does not easily follows the whims of Stockholm.⁵⁴ Gothenburg is proud to have an ambitious environmental strategy at the same time as this trading city also considers the big picture in terms of business interests, regional growth and infra structural considerations. Detailed regulation such as the PM regime needs to melt into the big bundle of issues that the politicians consider, and the problems with this regime are that

⁵³ These interest organisations have given refer responses on the Measurement Program decided on in May 2006. Non-selected actors were f ex national governmental authorities such as the Social Health Office or the Housing Office. No business actors were present here, apart from informal talks with the County Administration as well as participation through GR.

⁵⁴ Up to the autumn of 2006, both the national level and the city of Gothenburg were run by Social Democrats. But the “strong man” of Gothenburg, the city mayor Göran Johansson, decided to leave the Executive Committee (sv. *verkställande utskottet*) of the party at the national level, as a protest when military cut-backs hit Gothenburg (Aftonbladet 2005-09-01).

- the sanctions are unclear, not much happens if you defect it,
- the responsibility is primarily defined as municipal, but not shared equally between local and national interests (national interests represented locally can be consulted, but not forced to share financial burdens)
- local politics is in reality tightly woven into the neighboring municipalities & economies; restrictions on for example commuters and goods transportation needs to be negotiated and agreed in a wider context than the municipality.

Even though the city of Gothenburg plays an important political role even at the regional level, I have chosen not to define this level as an arena, as the outcome at the regional level to a large extent is defined by the stand of the Gothenburg politicians.⁵⁵ The Air Management Program in the GR-region is delivering investigation to the politicians, as well as suggested decisions, but do play a similar consultative role as the IVL does at the national level. The GR Air Management Program also closely cooperates with the Environmental Office at the city of Gothenburg, in order to share the costs. And after all, it the PM problems are primarily located in the central areas of Gothenburg. Air in the West plays a more marginal role, as they deliver measurement data on a regional level. Finally, examples of local interest organizations that have participated in the PM process, or at least raised a voice, are companies owned by the city of Gothenburg itself (such as Gothenburg Energy) or by the municipalities and the municipal region [municipal *secondaire*] (such as Traffic in the West). The single traditional type of voluntary association that can be traced in this process are *Green cardrivers*, but they are quite connected to the sphere of expertise and highly educated interests, rather than organizing any larger numbers of the larger public. The university has also participated through a refer response, but generally the university resources have hardly been drawn on throughout the local PM process. The politicians and the administrative persons in charge of the PM issue at the Office of Traffic, Office of Environment and the Office of City Building & Planning are together those who 'own the local process' throughout the studied period of time. The administrative persons are only a handful, but they are well informed, engaged and keep wide networks of information, both across the country and internationally.⁵⁶

To sum up, the PM regime in Sweden is tightly controlled by political interests and their assisting administrative support bodies, at the national as well as at

⁵⁵ Here I mean that the GR municipalities could hardly decide alone on a policy that is in opposition to the stand taken by Gothenburg. But what is the general pattern is that common policies are investigated and negotiated in a more deliberative manner, where final results primarily head at what is the common good for all partners, rather than establishing winners and losers.

⁵⁶ National contacts are well developed with national actors as well as with persons in charge of the PM issues in other municipalities. International contacts are primarily withheld with other similar cities in Europe working with AQ issues, but also with the wider bundle of traffic planning issues, environmental sustainability and planning issues.

the municipal levels. This does not mean that these two arenas comfort each other well. Rather, they have moved in a direction where they have found the smallest ground possible, and slowly learning and reflection has taken place from the bottom and up, and not only from the top to the down, as expected initially.

5. IDENTIFICATION OF INTERFACES/INTERACTION BETWEEN KNOWLEDGE AND GOVERNANCE ARRANGEMENTS

5.1 Synergies & Contradiction between Governance Arrangements and Knowledge Forms

The dominant knowledge alliance has in the PM case in Gothenburg proven to be found between the Institutional/Hierarchical Governance Regime and Expert Knowledge at the national and local levels. As has been discussed, national and local experts does not necessarily share the same worldview on the description of the problem, what measures should be taken and by whom. These contradictions are the main explanations to why a quite minimalist action approach has been achieved so far. The argument from the local level is that taken measures need to be evaluated, do they have any effect or not.

Another factor working in the background, independent of the taken measures, is that weather changes from year to year have significant effects on the PM levels in the air. The winter of 2006/07 was rather cold and snowy, and in April 2007 the Environmental Office declared in a press release:

“Already by the end of February we had exceeded the norm for NO₂ more times than what is accepted in a full year.”

The following winter 2007/08 was the warmest and wettest winter seen in a long time, and a headline in Gothenburg Post at March 14th, 2008, declared that “All the rain has cleaned up the air” (GP 2008-03-14). Now it said that the levels of particles were the lowest in eight years in Gothenburg, due to almost continuous raining and hard winds throughout the winter. This proves that professionalized groups of politicians and expertise may argue over the problem description, possible measurements and who should be defined as the proper issue owner; and these tasks may not be helped by such an untrustworthy external factor as the weather. Rather, this may illustrate the nature of the difficulty facing the groups of professions and politicians when they consider various possible action measures.

5.2 Relationship between Modes of Interaction and Knowledge Forms

We find here a situation where the two Action Arenas relate to one another in a clear hierarchical manner; but still each platform or Arena is rather flat when studied separately. Especially the local action arena is rather flat, with no clear winners and losers, but continuously strives to find workable arrangements for the City of Gothenburg, as for the larger region and for the local representations of state representatives (such as the Road Administration). The local actors tend to give priority to local interests before national requests, at least in this PM case with no clear sanctioning. The local interests are defined as political, administrative as well as economic in a general sense. Potentially, local interests could also have meant voluntary associations, media and citizen activism, but no such activities have been relevant in this case.

This means, that there's no relevant conflict line between politicians, experts, engineers or economic interests in this case. The only relevant conflict line is between national/EU interests at one side, and municipal/regional interests at the other. Experts at the national/EU level do have a different perception of what must, should and can be done than experts at the municipal/regional level. The local collaboration could be interpreted as a rather homogenous *culture of cooperation*, which many local actors refer as the "Gothenburg spirit". This could also be seen as a clash between the more pragmatic municipal/regional actors, while the national actors rely more on administrative and judicial knowledge but with low consideration of the limitations of the local action space.

5.3 Relationship between Governance Arrangements, Knowledge Forms and Learning Processes

The iteration of learning has just begun with regards to the PM issues in Gothenburg. Some forms of learning has started to occur (see discussion in section 3.5 above), but generally all actors seem a bit hesitant, glancing at possible outcomes from connected processes, such as the car congestion toll system in full use in Stockholm, or the traffic zones in the four cities Stockholm, Gothenburg, Malmö and Lund. From these practices, local actors are learning what are possible traffic reforms and to what costs for business and other interests, and what the relative gains are (for example in terms of decreased emissions).

The most important problem with the local learning process is that so many different storylines are circling around, and it is probably still too early to state that there's an agreement on any of those. Some examples follows here:

- The PM emissions are below the accepted limits on a yearly basis, and the worst "hot-spot" places should not have been included as accepted measure points.

- PM emissions originate primarily from studded tires, peaking in February and March. But it is up to the national government to change the regulations on the use of studded tyres, the municipality cannot do much here, apart from information campaigns (with low impact effects).
- Gothenburg hosts the largest port of Scandinavia, which is a Governmental Interest and within the responsibilities of the state. So are the roads, where goods are transported through the central areas of Gothenburg. If the government really wants a change here, they should dictate the cures and finance the costs for their own responsibilities.
- Various initiatives have been taken through the decided Measurement Program. Now, we have to wait and see if expected reductions occur due to these measurements, or if additional considerations should be decided upon in the future.

Until a common agreement has been reached on the definition of the problem, on what should and could be done, and on whose responsibility the problems are, the prospects are dim that the national and the municipal/regional action arenas will learn from one another.

6. IDENTIFYING 'GOVERNANCE FOR SUSTAINABILITY'

6.1 Assessing Sustainable Development in the Selected Case

Sustainable development is a general strategy adopted by the city of Gothenburg and also by the Region West Sweden. This means that most of the important decisions in the city need to contemplate the sustainability aspects. If the paths of development in the city gets more sustainable with this discourse than without it is difficult to judge, possibly can only future generations make justified conclusions at this point.

Whether the PM regime has conveyed the path to sustainable development can only be speculated upon. The PM regime has clearly lifted the issue at all levels and also across various sectors of the local administration and policymaking. The regime has pressed the alarm buttons, that also the AQ issue needs to be considered far deeper than it used to be, fine particles need to be regularly measured and preventive policies need to be adopted in order to prevent social costs such as yearly deaths, health problems in general and lowered living qualities in certain districts. Even though the regime is quite narrow-minded and instrumental, and the municipality is trying to avoid the direct effects from it (for various reasons, with various arguments), the PM issue is clearly on the minds of the group of persons who

handles these issues. The particle issue won't go away. Even without the PM regime, there would have been lots of sustainable initiatives taken, such as the traffic zone, and also the long term traffic planning takes a sustainability perspective into account. Now, the PM word has been planted into the processes, and something will probably come out from it, but it is at this stage difficult to see what, or what difference the PM regime possibly makes. It could be that the city planners, decisionmakers, environmental officers and others were 'doing the right thing' even though the PM word never had been mentioned.

In order to get even stronger effects from the PM regime, there needs to be PM strategies and action programs developed also for the national level and related national authorities. It is also a problem that the PM issue at the national level to a large extent has been dominated by the Ministry of Environment, while it also connects to ministries dealing with traffic and transportation means, tax and finances. A reworked AQ regime needs to consider the complexity of the multi-level policy systems, where no single actor can be responsible for a geographical zone. Possibly, the multitude of actors related to such a spatial zone could all equally say 'sorry, but I am not in charge here', and we would end up in a typical prisoners' dilemma situation. Rather, a regime also needs to be open for the more or less informal partnership networks which handle an increasingly part of the political capital in a local municipality as well as in a region.

6.2 Assessing the Legitimacy of Policy-Making in the Selected Case

Input legitimacy could be said to pass relevant criteria in the Gothenburg case. The process has been reported on in local media (GP), and anyone interested in the process could potentially have raised voices or get into contact with those involved. Why large groups such as residents and NGOs have not been parts of the process is unclear, but it is not a result of invisibility or exclusion from the public discourse.

Throughput legitimacy or institutional transparency relates to the *input legitimacy* mentioned above. As the process has been fairly open, the local media has at least produced some 100 newspaper articles on the PM issue from 1999 and on, and to trace the process has been quite easy for journalists as well as for myself as a researcher. The problematic side of the throughput lies at the national level, where the proper analysis is absent on what would be effective measures to tackle the PM issue, and what could the Government as a whole assist with on this point.

Output legitimacy is also difficult to judge at this stage, we don't yet know what effects decided measures may have, and factors such as variations in the climate may disturb this evaluation extensively. Probably it needs a time-span of 10 to 15 years before it is possible to agree on the output legitimacy, when a robust time series has been produced and where various measurements can be related to such a set of data.

6.3 Synergies/Contradictions between Governance Arrangements and Knowledge Forms on the one side and Sustainability and Legitimate Policy-Making on the other side

The primary contradiction seems to be the problem of institutional learning at the national level (between administrations/ministries and between local – national action arenas). The institutional PM regime supposes that the local administration can tackle the PM issue, but does not consider if possibly the national level could assist with dialogue, learning, policy changes, administrative coordination etc.

A contradiction between sustainability and legitimate policy-making may be that as long as the PM issue is a ‘low profile issue’, there will not be any pressure in the issue, neither from the local inhabitants nor from the national population. The Ministry of Environment may receive *more* sustainability and Air Quality obedience if they changed strategy more to opinion making, informing citizens about health risks with particulate matters, and were less strict on the Measurement Programmes for the municipalities. Probably, the Measurement Programmes as tools of steering should be considered, possibly there are other ways to steer more effectively.

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Appendix 1: Empirical Data Used in the SEA Case

Interviews

Citizen 1, March 15 2007

Citizen 2, March 16 2007

Civil servant 1 at the DCLUP, March 7 2007 (telephone) and July 20 2007

Civil servant 2 at the DCLUP, August 23 2007 (telephone) and October 15 2007

Civil servant 3 at the DCLUP, October 31 2007

Civil servant 4 at the DCLUP, March 3 2007

Civil servant 5 at the DCLUP, May 24 2007

Civil servant 7 at the DCLUP, May 25 2007

Civil servant 8 at the CPO, October 31 2007

Civil servant 9 at the CPO, October 25 2007

Civil servant 10 at A More Secure and More Human Göteborg, March 19 2007

Civil servant 11 at the Dep. of Park and Nature Services

Civil servant 13 at the City of Göteborg, March 27 2007

Civil servant 14 at the Dep. of Housing and Accommodation Services, June 28 2007

Civil servant 15 at the Dep. of Environmental Services, May 28 2007

Civil servant 16 at the Dep. of Recycling Services, November 9 2007

Civil servant 17 at the Dep. of Water Services, November 2 2007

Civil servant 18 at the Dep. of Recycling Services, October 25 2007

Civil servant 19 at the Dep. of Housing and Accommodation Services, October 31 2007

Consultant 1 at Sweco Eurofutures, October 4 2007 (telephone)

Consultant 2 at Sweco Eurofutures, October 5 2007 (telephone)

Department head at the DCLUP, November 6 2007

Expert 1 at the Dep. of Sociology, Göteborg University, March 21 2007

Expert 3 at Sweco, October 24 2007

Expert 4 at Sweco, November 2 2007

Politician 1, the Left Party, October 22 2007

Politician 2, the Green Party, October 31 2007

Politician 3, the Moderate Party, October 31 2007

Politician 4, the Christian Democratic Party, November 2 2007

Project leader 2 at the DCLUP, May 28 2007

Participating Observation

Open political meeting on the CLUP, the Central District, March 26 2007
Project meeting on the CLUP at the DCLUP, Hjuvik, June 7 2007
Public information meeting about the CLUP at Gamlestaden, March 6 2007
Public information meeting about the CLUP at Frölunda, March 12 2007
Public information meeting about the CLUP at Linné, March 28 2007
Public information meeting about the CLUP at Biskopsgården, March 21 2007
Workshop on the SEA (social issues) at the DCLUP, February 28 2007
Workshop on the SEA (social issues) at the DCLUP, March 13 2007
Workshop on the SEA (ecological issues) at the DCLUP, March 28 2007
Workshop on the SEA (ecological issues) at the DCLUP, May 2 2007
Workshop on the SEA (ecological issues) at the DCLUP, May 28 2007
Workshop on the SEA (economic issues) at the DCLUP, September 19 2007
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Minutes by civil servant 7 from the public information meeting about the CLUP at Frölunda, March 12 2007
Minutes by civil servant 7 from the public information meeting about the CLUP at Linné, March 28 2007
Minutes by civil servant 7 from the public information meeting about the CLUP at Biskopsgården, March 21 2007
Minutes by the civil servant 7 from the workshop on the SEA (social issues) at the DCLUP, February 28 2007
Minutes by civil servant 7 from the workshop on the SEA (social issues) at the DCLUP, March 13 2007
Minutes by civil servant 7 from the workshop on the SEA (ecological issues) at the DCLUP, March 28 2007
Minutes by civil servant 7 from the workshop on the SEA (ecological issues) at the DCLUP, May 2 2007

Minutes by civil servant 7 from the workshop on the SEA (ecological issues) at the DCLUP, May 28 2007

”Konsekvensbeskrivning sociala faktorer ÖPXX”. Written comments by civil servant 11 (the Dep. of Park and Nature Services) to the second workshop on the SEA (social issues).

”Mångfald, tryggt och mänskligt.” Written comments by civil servant 10 (A More Secure and More Human Göteborg) to the second workshop on the SEA (social issues)

”Reflektioner över ÖPXX ur ett socialt perspektiv”. Written comments by civil servant 12 (Torslanda District) to the second workshop on the SEA (social issues)

”Stadsmuséets synpunkter”. Written comments by the City Museum to the second meeting on the SEA (environmental issues)

”Synpunter från Miljöförvaltningen. Tankesmedjan om konsekvensbeskrivningen i ÖPXX – kretslopp och emissioner”. Written comments by civil servants 21 and 22 (the Dep. of Environment Services) to the second workshop of the SEA (environmental issues)

”Synpunter – konsekvensbeskrivning ÖPXX, blocket ekologi”. Written comments by civil servant 14 (the Dep. of Housing and Accommodation Services) to the second workshop on environmental issues.

”Synpunter på förslaget till översiktsplan och konsekvensbeskrivningen”. Written comments by expert 1 (Göteborg University) to the second workshop on the SEA (social issues)

”Synpunter på ÖP”. Written comments by civil servant 13 (the City of Göteborg) to the second workshop on the SEA (social issues)

”ÖPXX – synpunkter på övergripande miljökonsekvensbeskrivning”. Written comments by civil servant 20 (Dep. of Park and Nature Services) to the second workshop on the SEA (environmental issues).

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