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The role of scientific environmental knowledge in decision-making in the City of Helsinki, Finland

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The effect ecological information has on the decision-making process, largely in connection with traffic planning and land use in the City of Helsinki and its metropolitan area, is evaluated on the basis of some examples of projects. In Finland, significant changes in the environmental legislation have had a positive effect on the decision-making process from the environmental point of view. Planning of the new housing area in Viikki was a positive example in this respect. Even though real alternative assessments in the spirit of EIA principles were not possible to realise, the planners were able to offer alternatives that were based on ecological and other sectors of environmental research that resulted in partly preserving the most valued parts of the landscape and nature for the future. On the other hand, in the Helsinki Metropolitan Area traffic plan the ecological facts played a minor role in decision-making despite a significant amount of various kinds of research, reports and carefully applied EIA principles in the evaluation process of various alternatives. To control the process of building density and to minimise the loss of diversity of the surrounding nature is, from an ecological viewpoint, the greatest challenge to the city planners. This will demand from the researchers up-to-date and reliable information on the current state of the city's natural areas and an effective system to convey the data to the city planners.

Introduction

In this article, the effect of ecological information on the decision-making process, largely in connection with traffic planning and land use in the City of Helsinki and its metropolitan area, will be examined. As it is not at the moment feasible to present an all-embracing evaluation of Helsinki, the best way to clarify the issue is to introduce a couple of examples of significant projects. These projects demonstrate how to take into consideration the multiple ecological and related information that is connected to the environmental effects in the decision-making process. The first of these examples is the regional plan for the Viikki–Vanhankaupunki bay area that was undertaken between the 1980s and 1990s (Helsinki City Planning Department 1990). The second example is the transport system planning process for the whole of the Metropolitan Area of Helsinki.

The perspective here is that of the municipality. A municipal environmental authority has a rather limited possibility of influencing the decisions that are made. It is limited mostly to drawing up the many particular statutes concerning permits and supervision procedures. The Environment Centre of the City of Helsinki compiles, distributes, and evaluates information connected with environmental questions for the city plan-

ning system and for the politicians who are the decision makers.

Legislation directs the activities of the authorities. During recent years, following Finland's accession to the EU, legislation concerning environmental protection has undergone significant change. These changes seem to have had a positive effect as they have focused more attention on environmental problems. In preparation for the decision-making process, the influence of the evaluation and the quality of the information has been stressed, and the decision-making process focussed on the grounds for the decisions made.

Land use and building act underlines the importance of information: 'The city plan has to be based on sufficient research and reporting procedures. In drawing up the plan there has to be a sufficient amount of information concerning the environmental impact the proposals will cause, amongst others, the socio-economic, social, cultural and other related effects' (Kuusiniemi *et al*. 2001). According to environmental impact assessment (EIA) legislation, an emphasis has been placed on the acquisition of reliable information, evaluation, examination of alternative solutions and public participation (Kuusiniemi *et al*. 2001). The law gives detailed requirements concerning the quality of feasibility programmes and reporting, in addition to making provisions for reporting on a lack of information and assessment in cases where uncertain factors are involved. In addition, reducing the harmful effects of a project and monitoring these factors are important elements in EIA legislation. The general goal has been to add the environmental viewpoints into the decision-making process, hand-in-hand with the economic and technical perspectives. Correspondingly, the evaluation of the environmental impact is also included in the revised nature conservation legislation. The latest development is the preparation of legislation to evaluate the environmental impact of planning and programmes.

The interaction between scientific research and decision-making

Use of scientific knowledge in administration and politics has only been seriously studied in the last few decades (e.g. Leviton and Hughes 1981, Beyer and Trice 1982, Lampinen 1992). When a decision maker, or in general an administrative representative, speaks about scientific information the speaker does not usually make a clear distinction between the various types of information, whether it is a question of inventory type information or monitoring data or various types of clarification or real scientifically based data that fulfils defined scientific criteria. It is a fact that the knowledge derived from research has no special position in the decision-makers' world of ideas but is evaluated in the same way as any other type of information.

The interaction between decision-makers and researchers has been viewed as problematic to a certain degree. The decision-maker will often refer to the differences of opinion amongst researchers concerning questions that are to do with the environment (among other factors atomic energy production, brushwood pesticides, fluorination of drinking water, the greenhouse effect). It has been seen that when trying to find solutions to the problems, new issues of controversy have arisen in their place. The decision-maker in question can get lost in the search for reliable sources of data in the flood of information and conflicting views. It can also be seen that researchers and decision-makers represent two different cultures that reflect a world of ideas that are quite remote from each other.

In the process of making decisions in society, which is referred to as politics, interests and appreciation always take the first place. It is quite usual that the information that supports prevailing concepts is taken into consideration.

Information derived from research has its greatest impact in the opening stages of the decision-making process, when the definition of the problem is still open and the related interests and values have not reached a phase where they have become entrenched in their respective standpoints (Lampinen 1992). The greatest opportunity that is presented in research is its ability to produce information that describes the present state of the environment and society — the information that leads to conclusions dealing with norms. On the other hand, research also has the ability to open new points of view to the debate.

Information gained by research can be transferred directly to the machinery of administration that is preparing the decisions to the decision-makers. According to Lampinen (1992), this route can, in many cases, be too slow to exert an influence on the decision-making process in good time. Various pressure groups within the society or public opinion can be a more influential channel when compared with the effects resulting from research. In questions concerning the environment, this kind of groups often rise to the fore. However information that is conveyed through this channel can in some cases easily become one-sided and lead to a situation ripe for political exploitation. In general, an open-decision-making-system, where the decisions being made are based on information, and the basis of the decision-making process is documented, offers the best means for research to exert an influence on the process.

The role of scientific environmental knowledge in traffic planning and land use in Helsinki

Points of departure

Using a variety of standards, the current state of the environment in the Helsinki region can be considered to be fairly good, when compared with a similar sized or larger city in other parts of the world. A recent comparison of an American survey conducted in 2003 ranked Helsinki as one of the cleanest cities in the EU (Mercer 2004). The strengths of Helsinki can be seen in the quality of air, public transport, the condition of the regions' watercourses, the standard of its drinking water, the effective utilisation of energy and refuse disposal, in addition to the preservation of the surrounding nature and a developed network of recreational areas. The built-up areas of the city, particularly within the city centre, have received widespread recognition amongst visitors here.

Reasons for this rather favourable situation in Helsinki are, primarily, that construction within the city has been conducted with control and that to a great extent the city has been successful in preserving its original character inherited from previous centuries (Schulman 2001). Furthermore the city has also been fortunate in avoiding bad planning solutions as far as traffic and communications are concerned. The fact that the city is situated on a narrow peninsula is one reason why there are no large motorways that split the city. More than 70% of commuters in the morning rush hour still use public transport to commute to the city. As far as the good quality of the air in Helsinki is concerned, we can thank to a large extent the far-sightedness of the civil engineers, who already in the 1950s realised the practicality of combining the production of electricity with district heating. This solution did not result from an ecological standpoint; it was based on an economic viewpoint. Mistakes, of course, have been made, but to a great extent city planning can be considered to have been successful to date, by adapting so-called good planning principles in drawing up Helsinki city plans.

Examples

Viikki–Latokartano district plan

From an ecological perspective, the Viikki–Vanhankaupunki bay area is one of the most prized districts of the City of Helsinki. The nature conservation area, the cultivated fields and natural scenery in the geographical center of the city form a unique totality. The proposed land use objectives that were drawn up for this area in 1989 posed a challenging point of departure for the city planners. Two alternative scales of development were proposed that would develop 650 000 or 1 200 000 m^2 of floor space, largely constructed for residential accommodation. This would be the equivalent to an influx of 10 000 or 15 000–20 000 inhabitants, respectively.

When this planning process began there was no legislation in force in Finland to help measure the environmental impact of such a project. Legislation was not drawn up until as late as 1994. On the initiative of the environmental authorities, however, the city's planners decided to go ahead with a voluntary experiment and the drawing up of the environmental impact report for Viikki became the first EIA report to be realised in the district plan in Finland, in 1990.

Fig. 1. District plan of Viikki (Helsinki City Planning Department 1994).

The drawing up of the district plan (Fig. 1) and reporting on the environmental effects were conducted in parallel. A wealth of research material on the nature conservation area of the Vanhankaupunki bay region that had been compiled over a period of more than 100 years was introduced in the report. In addition, separate reports were made on such subjects as bird life in the region, changes to the landscape, the quality of air and the impact of noise.

The report did not manage to exert an influence on the extent of building construction in the area as the decision-makers had already selected the more extensive development project for the basis of the plan, prior to the commencement of the investigation. When this decision was made the environmental effects of the project had not been determined. During the preparation of the report, however, a degree of success was achieved when a recommendation to develop construction away from the more sensitive regions of the nature conservation area and to give guidelines in locating the development in the vicinity of roads serving the area. Since then, nearly 20 separate reports or plans related to environmental issues have been made that continue to influence the development of construction.

There has been a desire to emphasize ecological values in developing the Viikki project in accordance with specified criteria (forms of heating energy, electricity, water). Research on how this has been put into practice is in the course of preparation. In co-operation between the city and the university of Helsinki, a plant and environment information centre, Helsinki-Gardenia, has been built adjacent to the Science Park that also serves as an information and guidance centre for the surrounding nature at Viikki. Also rather much attention has been given to use and management of the environment in a combined effort from the environmental authorities of the government and the city, and the area has also received, and continues to receive, support under the EU Life Fund programme.

As a general evaluation of the Viikki development we can confirm that even though real alternative assessments in the spirit of EIA principles were not possible to realise, the planners were able to offer alternatives that were based

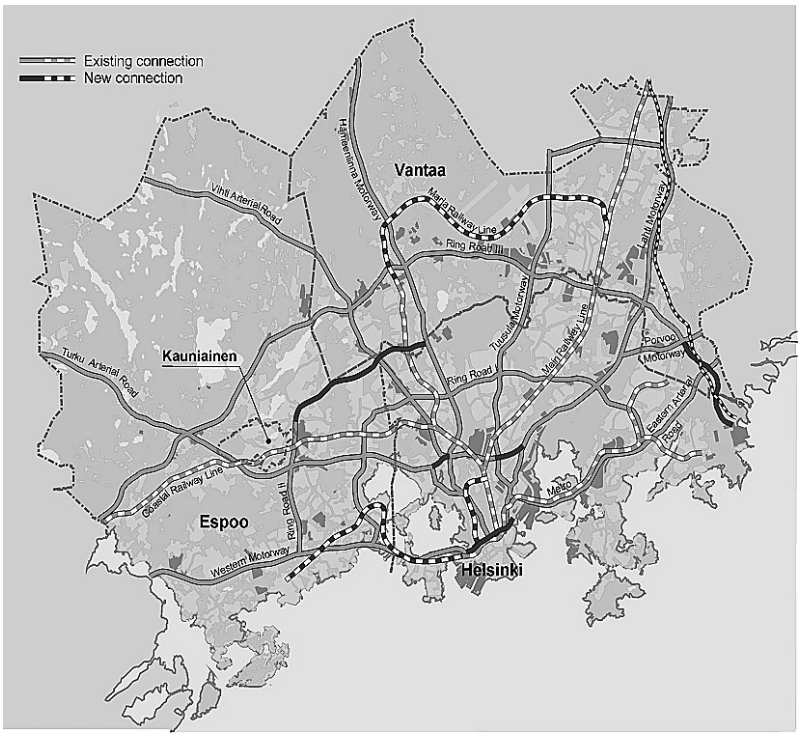

Fig. 2. Helsinki Metropolitan Area transport plan target transport network 2030 (Helsinki Metropolitan Area Council 2003).

on ecological and other sectors of environmental research that resulted in partly preserving the most valued sectors of the landscape and nature for the future.

Traffic planning for the Metropolitan area of Helsinki

The cities of the metropolitan area of Helsinki cooperated in drawing up a comprehensive system of transport (henceforth PLJ 2002; Helsinki Metropolitan Area Council 2003; Fig. 2) that is subject to review at 4-year intervals. This forms a strategic plan which defines the common objectives for development, guides regional communications policy, draws up the means of finance for a realistic development plan and evaluates the effects, such as the impact on the environment. The plan expresses the common will of the cities in relation towards the government whose participation in financing the projects and putting them into practice was an essential condition.

A significant amount of various kinds of research, reports, estimates and traffic planning together with analysing the existing material on the subject was undertaken in this project (22 reports, mainly in Finnish, Helsinki Metropolitan Area Council 2003). In drawing up the plan the EIA principles were employed and the evaluation of the effects commenced by planning a total of four alternative methods to develop the traffic system. The effects were examined in relation to the current situation and by comparing them with one alternative 0+ in 2025. The plan, like its predecessor in 1998, can be regarded as a good example of a practically applied strategic EIA examination in conjunction with this significant plan. This is a question of an exemplary and all-embracing estimation of the outcome of this evaluation in which the most significant effects were brought to light.

During the planning process it was noted that the acquisitions and the related interests easily dominated the discussion. There was a lot of debate amongst the parties involved concerning the order of priorities in the plan, with the major issue being the extension of the metro network westward from Helsinki to Espoo and new ring-road construction projects. The appreciation

received and the well-planned evaluation of the effects of this plan were left aside in the final result. The usage of land together with traffic circuits and the interaction had to give way to the examination of traffic systems network.

Perhaps the most unfortunate aspect of the approved programme was the postponement of the measures for noise abatement to the planning phase that will be instigated after the year 2007. All acquisitions before this phase are projected for roads. By the time the PLJ 2002 had concluded their work there was also no clarification on establishing and evaluating suitable models for monitoring air quality in various parts of the region. The PLJ report concerning air quality in 2002 was not completed during this project and is apparently still pending. The increase in traffic noise and emissions are perhaps the most significant environmental problems in densely populated cities.

The future

Sustainable development has recently been defined as one of the values for Helsinki. It is also one of the points in the city's strategy that the city council has confirmed from session to session. In accordance with this principle, the city council approved in the summer of 2002 a programme for sustainable development for Helsinki that defined, in detail, the principles and lines of operation in accordance with which the ecological sustainability for the future could be assured. In principle, the ecological perspective has achieved a position alongside the economic and social perspectives. The future will show just how this principle can be put into practice or whether this goal will remain merely an empty declaration on the agenda.

In the future the city will be subject to pressures of multiple change. The rapid, and in many ways surprising, rate of development is reflected in the demand for information derived from research. The input of science and research can be clearly seen as a positive factor in the development of the city and the innovation and creativity that it offers can be considered as necessary for a city undergoing structural change.

Even though there has been a slight downturn in the population growth of the metropolitan area over the last few years, the number of people moving into the greater metropolitan area is still expected to continue. Part of this increase will also affect Helsinki. The recently approved city plan of 2002 has made provision for a population of 600 000 inhabitants by the year 2020. The most extensive developments in the use of land will be the transfer of the cargo port to Vuosaari, in eastern Helsinki, the development of Central Pasila, the housing developments in the old harbours of Jätkäsaari and Sompasaari together with the Kruunuvuorenranta housing development on the site of the old oil harbour in Laajasalo. In development projects the city has endeavoured to focus on developing areas that can utilise the existing mass transportation network. When population centres become increasingly built up conflicting opinions are created amongst the residents of these areas. The general concern is that the local nature of these areas will be lost and that the facilities for recreation will diminish. The diversity of the nature in the city, that to a large extent does not depend on nature conservation areas, but consists of the usual surrounding nature, is regarded as coming under the threat of extinction.

It is quite clear that to control the process of building density and to minimise the loss of diversity of the surrounding nature is, from an ecological viewpoint, the greatest challenge to the city planners. This will demand from the researchers up-to-date and reliable information on the current state of the city's natural areas and an effective system to convey the data to the city planners. The decisive factor, however, is what weight the diversity of the region's natural areas in the future will be brought to bear on the values of those who have to make the decisions. Looking at the development over the last few years, the weight given to environmental questions in public debate has been less significant and there has been a subsequent rise in so-called hard values. So in this respect there is no reason to expect too much.

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