3G of Sweden – technological growth and sustainability issues

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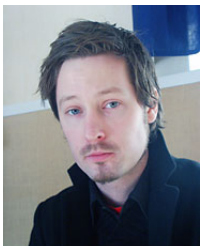

Abstract: The article discusses the construction of 3G infrastructure under four themes from planning and sociology of law perspectives. This includes the design of the initial license procedure, the 3G-developments physical aspects in a different actors driving forces point of view and the practical sides of sustainability issues at both regional and local level. Public concern over electromagnetic radiation, and the question whether this is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law.

Key words: 3G infrastructure of Sweden, environmental administration, sustainability issues, spatial planning, sociology of law, sustainable development in practice, public concern over electromagnetic radiation, technological optimism, norm conflicts

Project: MiSt 2 - Infrastructure for the third generation mobile telephone system as a sustainability issue in planning and environmental administration.

The infrastructure for the third generation of mobile telephony is under construction in Sweden. The 3G case offers a unique possibility for studying how the planning and environment protection administrations at local and regional level in practice handle a sustainable development issue: on the one hand a national technological growth system and on the other environment protection, resource use, public concern over radiation etc. A licentiate thesis in Spatial Planning at BIT is part of the MiSt 2 project.

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3G OF SWEDEN – TECHNOLOGICAL GROWTH AND SUSTAINABILITY ISSUES

Stefan Larsson

Part of the MiSt2: Infrastructure for the third generation mobile telephone system as a sustainability issue in planning and environmental administration

The licentiate thesis confronts planning issues of the construction of the infrastructure for the third generation of mobile telephony in Sweden. In doing so, it contains a wide range of empirical data, not the least regarding permit processes. The licentiate thesis depicts the problem areas of the construction and relates the centrally and nationally stated goals to the everyday handling practise of the issues at the local municipal level.

There are conflicting goals between institutional levels, vertically as well as horizontally. The technological optimism of the national and regional politics is struggling with environmental and sustainability goals at the same time as the assessment is pushed down to the local authorities at the permit process level. There are unplanned effects, both environmental as well as social as a result from the lack of a more comprehensive assessment.

The infrastructure for the third generation of mobile telephony is since the year of 2000 under construction in Sweden. After the initial beauty contest four operators were given licenses to build the infrastructure for 3G on a few conditions. Within three years four operators were to build competing systems to cover 99,98 % of the population giving the administrative system an extreme challenge. The coverage by the end of the period was lacking about 26 %, with only three operators still participating in the construction. The 3G case offers a unique possibility for studying how the planning and environment protection administrations at local and regional level in practice handle a sustainable development issue: on the one hand a national technological growth system and on the other environment protection, resource use, public concern over radiation etc. When seeking answers to questions deriving from the construction of 3G in Sweden, the permit process within the municipalities holds many of the keys. Hence the legal design, the planning and environmental legislation, and the outcomes of it, especially the permit process for mast construction, will empirically be investigated. Overall or comprehensive aspects of the infrastructural construction, such as the design of the initial license procedure, the 3G-developments physical aspects in a different actors driving forces point of view will be studied from a perspective of both planning and sociology of law. The electromagnetic radiation, and the anxiety for it, and the question whether it is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law. The study of conflicting norms, legislation and means of control is clearly interesting in the case of 3G of Sweden. Methodologically the thesis will capture and explain aspects of the construction and development of the infrastructure of 3G from a quantitative foundation with qualitative contributions to it in certain aspects of special interest. The study continues and extends a pilot study of the 3G infrastructural construction by Emmelin and Söderblom, and will be both empirically broadened and theoretically differently founded (Emmelin & Söderblom 2002). The study will be presented as licentiate thesis in Spatial Planning at BIT, Sweden, and is a part of the MiSt2 project. The object of the study is to make:

1. An in depth study of a number of theoretically and practically important aspects of the 3G project of Sweden, related to spatial planning and sociology of law, specified below.

2. Charting of the permit processes as they develop in time and over the entire country and screening for the main issues and conflicts, as listed below.

Such a sizeable infrastructural project as the one of 3G in Sweden is of interest from many views. From the planning perspective and the approach of sociology of law the following themes are focused on within the thesis:

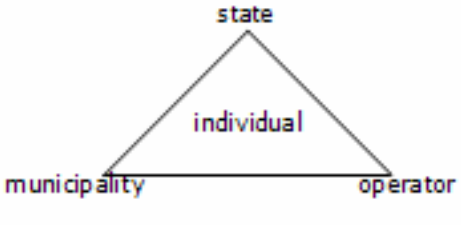
1. Sustainable development in practice
2. The 3G game
3. The precautionary principle and 3G
4. 3G and the rhetoric of competition

The four themes of the study

1. Sustainable development in practice

The construction of the 3G infrastructure in Sweden can serve as a model of how the central issues of "sustainable development" are handled in practice by planning and environmental administration at regional and local level. The issue may be outlined in terms of an implementation issue in the conflict between a national growth policy confronted with regional and local environment protection. This has clear relevance to the discussion of *the Game of 3G* below. Is the municipalities jammed between a national technological growth system on one hand and the environment protection, resource use, public concern over radiation etc on the other? If so, what effects may be seen? What if the municipality is overall negative to the 3G infrastructure? Critics mean that the environment in a too large extent pays for the technological optimism behind the 3G infrastructure construction. Some mean that the 3G construction means a too large infrastructural interference to be kept within the Planning and Building Act, that a more comprehensive planning is necessary.

2. The 3G game

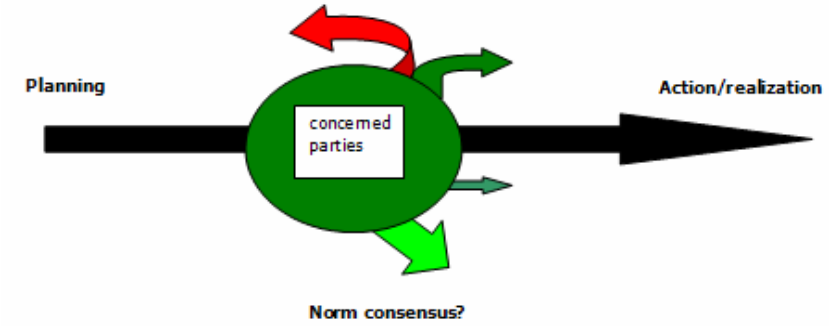


The decision on how, and how fast, the infrastructure to 3G should have been developed has had several implications of great interest to both the perspective of planning and sociology of law. The decision was central and governmental but the carrying out was set to be through the rules of the market via operators who received licenses depending on promises of coverage and fast infrastructural development. The decision included all of the populated areas of Sweden, about 25 % of the total area, meaning the construction of several thousands of masts governed through the permit processes locally and regionally, including 290 municipalities and 21 county administrative boards, 4 operators and numerous individuals with right to appeal on specific mast matters. The construction was to

be supervised by a central agency, the PTA, with power to negotiate with and fine operators not complying with the license terms.

The construction of the 3G infrastructure can be seen as a game with three main participants. The government handed out licences with ambitious requirements in terms of coverage and when to reach it. In the operators interest lies to reach the best position on the market and economical benefit, which do not necessarily correlate with the license terms. Using a simple figure may describe the lack of consensus between the participant or the parties concerned by the construction of 3G infrastructure in Sweden. Different norms may be the case in different parties and these conflicts may give a different outcome of the project than planned. A party may also have internal conflicts of interest or driving forces, i. e. the state.

There are many different concerned parties in the 3G mast issues, of importance to the environmental as well the sustainability issues. The attitude, or normative posture, of the involved parties is clearly influencing the outcome of the planned action, hence The practical side of the conflicts between sustainability dimensions in the systems are handled at the lowest levels in local authorities. Implementation of the decision of 3G demands that some kind of consensus is created between the acting participants. This opens for factors as organisational culture, competence, the ability to cooperate, attitude towards the project etc. In short does it require that micro-organisational behaviour is taken into account (Khakee 2000, Lipsky 1979) It is not far fetched to add that the study of norms, both within the organisation of a participant and between participants within the project. Some of the aspects that are relevant to whether a project will be successful or not, where the 'action' will take place in a way the planning intended we choose to describe as depending on norm structures. The process of implementation can in this sense be described as:



In the transition to a more sustainable development the planning paradigm can be supported by the concept of norms in sociology of law. The 3G infrastructural development can be described as a constant progress containing norm conflicts. The legal norms are involved mainly as a result of the top - down setup, which quite naturally lead to the question of what the ability is of the legal system to create a degree of consistency from supranational via national and regional to the local level where legally binding land use decisions are taken in a fragmented system. This is where part of the problem lies, in the fragmented system, the jigsaw puzzle created one piece at a time through each and every mast permit process. In the initial design of the infrastructure construction the search for market efficiency seems to have overbalanced the environmental assessments, at least from a PTA point of view (Emmelin & Lerman 2004, SOU 2005:97).

3. The precautionary principle and 3G

Public concern over electromagnetic radiation, and the question whether this is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law. The Environmental Court of Växjö ruled out, at the 13th of September 2004 (case no M 3411-04), that the possibility of radio masts being regarded as an activity causing damage or detriment to the environment. The operator, in this case represented by Svenska UMTS-nät, therefore was not obliged to map out the mast locations, which the municipality of Landskrona had injuncted. However, the Environmental Court of Appeal revoked in 12 October 2005 the decision (case nr M 7485-04). Does this mean that the view on the impact of the radio activity that a 3G mast has on its surrounding has changed from the initial view of the Swedish Radiation Protection Authority, SRPA, the National Board of Health and Welfare, (Socialstyrelsen) and the Swedish Environmental Protection Agency (Naturvårdsverket)? When does the fact of what people fear become a legal concern? This is if great interest from the view of sociology of law. When, and how, that fact is communicated into the legal sphere is of clear interest, not the least from a sociology of law point of view.

4. 3G and the rhetoric of competition

Initially the competitive aspects of having four different operators and infrastructures where emphasized, "The forces of the market shall rule" was the rhetoric. This soon turned into a concern for the lack of inter-corporate mast-cooperation. The Minister of Information Technology in the year of 2003, Ulrika Messing, announced in a press release in March that the Government wanted to reinforce the PTA possibilities to intervene "when the free competition is not working". In the beginning of the year 2005 a commission was appointed to investigate the possibilities of forced co-location and how the cooperation between operators could increase, which was not met with enthusiasm by some of the operators. The commission resulted in the report SOU 2005:97. Between the changes in the Electronic Communications Act, ECA, of 25 July 2003 up until the end of 2004 there were 11 applications from operators to the public authorities to force other operators to cooperate concerning the space for equipment on a mast. 9 of these where settled through private agreements between the operators and in 2 of these cases were settled by the PTS (both applications were dismissed). The commission resulted the 20 March 2006 in a governmental proposition regarding changes in the ECA on the forced mast co-location issue. The proposal expands the possibilities to force an operator to offer co-location on mast at a compensation adjusted to the conditions of the market and is suggested to come into effect 1 July 2006 (Prop. 2005/06:191*).*

Co-location of masts

The operators are free to make agreements with each other

Operators may be obliged to co-locate if it is required for the protection of the environment, peoples health, general security or for physical planning goals (ch. 4 § 14, 2003:389 Electronic Communications Act

Co-location may be the case when an operator is denied building permit and alternate locations are missing. If there is mast in the vicinity the operator can apply for co-location at the PTA.

A resent legal proposal suggests expanded possibilities for the PTA to force co-location.

The initial rhetoric of not interfering with the market forces can be questioned on the grounds that the market premises to a large extent was put out of action already by the license conditions of full coverage and short infrastructural construction time-limit.

There are conflicting goals between institutional levels, vertically as well as horizontally. The technological optimism of the national and regional politics is struggling with environmental and sustainability goals at the same time as the local authorities are left to deal

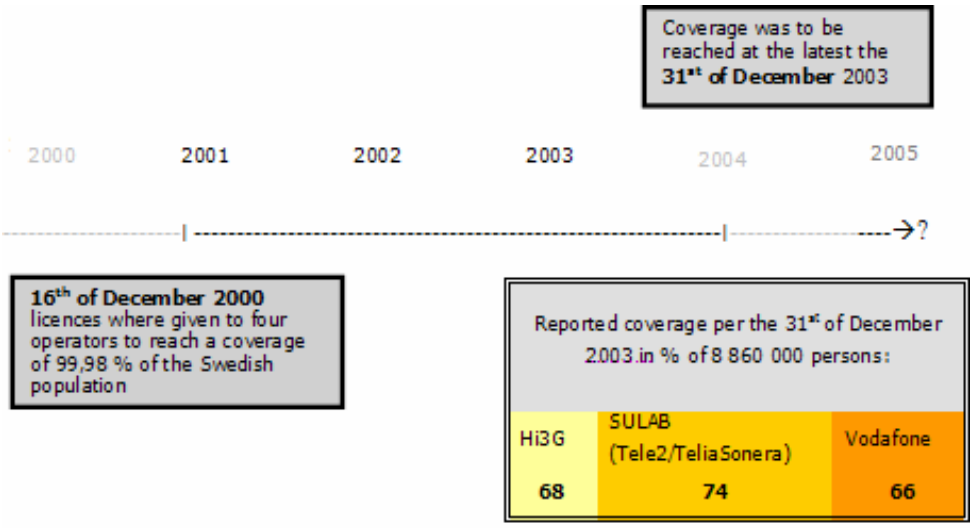
with it in the shape of permit processes. On one hand there is a central, national, decision on that Sweden will have 3G infrastructure granting high mobile coverage and on the other hand each municipality has a monopolised function of controlling the planning and building within its region. The rhetoric of the initial period was emphasising the importance of a fast reach of high coverage. Still, the legal instruments remained unchanged. Under the headline questions as the following will be discussed from an empirical foundation: What happens when the local planning authorities does not share the technological vision the original decision was taken in? Is it common for the municipalities to have a narrow interpretation of who has the right to appeal in a mast permit process? Is the practice more narrow than the law intended? To what extent can the coverage delay be explained as a result of a slow local or regional permit processes?

On the perspective of sociology of law and the legal structure

Sociology of law offers a set of perspective-giving tools in relation to law and norms as something directing actions. The method of sociology of law is a social scientific method opposing, or in addition to, the traditional legal method. Sociology of law, being a social science, may collect whatever facts regarded as relevant in the context of the theoretical standpoint and the research questions. Sociology of law has in a sense an external view at the legal practise. If you want to find out the *actual* consequences of a legal rule you have to *actually* open your eyes and take a look, collect empirical data of some sort. Theoretically the project expands the planning understanding in a legal as well as socio-legal way. Part of the sociology of law studies will be of the normative processes relevant to concerned parties of the infrastructure construction. The 'norm' is in this case not understood as synonymous to a legal norm but as something governing or assigning human actions, the inherent entity that is expressed in the action. Some norms do equal the legal norm, many do not, and the most behavioural norms are simply not the object of legislation (Hydén 2002). There are several examples of study of norms in a institutional, organisational or structural sense (Baier 2003, Wickenberg 1999). The norms consist of three conditions described as *will/values*, *knowledge/cognition* and *system/possibilities* by Hydén (2002). The three interact to different degrees but all form the prerequisites of action. The norm perspective gives a methodological context of studying the driving forces as well as other relevant factors for the actions around sustainability issues such as cognitive aspects and systemic disposition. The study of conflicting norms, legislation and means of control is clearly interesting in the case of 3G of Sweden.

Investigated time span and empirical data

The time span investigated in the licentiate thesis has its focus on the period charted in the license conditions, although the time span will be expanded in relation to certain important aspects. The period before the end of the year 2000 is of interest, especially when it comes to understanding the big picture and the background of 3G in Sweden. The investigated time span for the thesis will be stretched beyond the period after the end of the year 2003 in relation to specific aspects of the thesis. In the light of the license conditions the expansion of 3G in Sweden never became what it was said to become. At least not within the time limits.



All permits regarding 3G masts up until November or December 2005 is collected from the County of Blekinge, which includes the municipalities of Karlshamn, Karlskrona, Olofström, Ronneby and Sölvesborg. In addition to the collected Blekinge material two questionnaires made by Temo addressed to the municipalities of Sweden from 29 December 2003 and 7 April 2003 regarding the permit process will be used in the analysis. Both surveys are quantitative but the latter is added with a qualitative study based on interviews with handling officers, politicians and trade and industry responsible of 25 municipalities and 2 county administrative boards. In order to broaden the understanding of what phenomena the process of expanding the infrastructure of Sweden is depending on, the empirical data from the Blekinge permit processes may be expanded with i. e. selections from different "type" municipalities. Such types could be extremes on the scale of municipalities with different attitudes towards the infrastructural process or different local strategies for the construction and permit processes of the infrastructure within the area of the municipality. This could for instance be Trelleborg in the southern of Sweden, a municipality that has been known as an "anti-municipality", in the sense of having been outspokenly reluctant to the new mobile technology and it's required masts. Several questions outlined below demand studies of certain legal cases of principle interest, as well as other legal material and articles as well as different official PTA reports and information gathered via interviews.

On the final analysis

One could claim that every meaningful critique should suggest improvements. The cumulative process of creating well-founded knowledge about the Swedish system of building the infrastructure for the third generation of mobile telephony allows a counterfactual and comprehensive question to emerge: How can a administrative system be designed to handle in a satisfactory way both a large scale infrastructural development and environmental concerns at the same time? The counterfactual discussion, or the counterfactual aspects lies within an analytical segment of the study. Naturally, a problem with a counterfactual discussion is the problem of falsification. There is no scientifically self-evident way to prove a counterfactual discussion wrong, or right. Nevertheless the discussion is of relevance and the aim is that the study within the thesis will add knowledge to this discussion. The understanding of sustainability issues, especially in such a grand billion dollar project as the 3G construction, seem to benefit from such an inter-disciplinary approach between planning and the legal and socio-legal aspects of sociology of law. The practical implications of a society in transition

towards the thinking and acting for a sustainable development lies as a foundation for the study, which also includes the dimensions and functions of legal systems and conflicts of norms. In this case in relation to the organisations, institutions and concerned parties, both planning, administratory as well as private, of the development of the third generation of mobile telephony in Sweden.

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