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## What type of knowledge rules where? Legally regulated participation in large-scale mobile infrastructure planning in Sweden

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**Abstract.** I investigate the field of tension between the national and the local level in spatial planning from a decision-making perspective. In doing so, I analyse the legal regulation for a large-scale 3G mobile infrastructure development in Sweden with a focus on how participation is expressed both in terms of the ‘law in books’ as well as empirically, ‘in action’. Theoretically, a model of decision making is elaborated, based on two axes: one concerning the decision level on a central or national to local scale, and one concerning what type of knowledge is regarded as the most legitimate in terms of a calculating approach versus a communicative approach. These two issues or approaches to decision making—who decides and based on *what knowledge*—are of direct importance for understanding the frameworks as well as the practical outcomes of public participation. The case of 3G in Sweden demonstrates how different types of knowledge are perceived as legitimate at different levels in the planning system. For example, appeals against building permits rarely change the outcome of permits issued, and appeals based on fear of electromagnetic radiation are always rejected. The juridification of a given mast conflict meant a development from a deliberative approach, where any concern is heard, to a calculating and expert-based one, where the general stance on a particular topic (such as whether or not the electromagnetic radiation from mobile masts is hazardous) is applied. This means that *what* knowledge is legitimate depends on *where* in the permit process it is presented.

**Keywords:** public participation, calculating, communicative, law in books, law in action, 3G infrastructure, UMTS, electromagnetic radiation, spatial planning

### Introduction: between policy and participation

Planning theory was, up until the early 1980s, very much preoccupied with the typologies derived from Faludi (1973), who based his approach on the distinction between substantive and procedural theory (see also Allmendinger, 2002, page 79). Allmendinger (2009) describes Faludi’s understanding of planning as the application of scientific method to policy making (page 31; see Faludi, 1973, page 1). This has developed in a number of directions, both in terms of elaboration (Yiftachel, 1989) as well as critically—namely, that the Faludi distinction represents too technocratic a mode of planning which excludes different groups in society (eg, Sandercock, 1998, page 4). Furthermore, from a more contemporary perspective, which we can call postpositivist, Faludi’s distinction would probably be seen as a false dichotomy (Allmendinger, 2009, page 41). The collaborative planning perspective targets this in terms of what type of knowledge should be regarded as the proper type to govern planning and decision making (Larsson, 2011a; Larsson and Emmelin, 2009). The kind of rationality that Faludi mentioned was of an instrumental variety, which was based on a particular view of objective knowledge. Planning theory based on Habermas’s theories (1981) on communicative action

argues that there are other forms of rationality (Allmendinger, 2008, page 50). This has been a way of arguing for the necessity of public participation in planning.

Conrad et al (2011) state that, although public participation is now accepted as an essential requirement of planning, there is limited literature that considers the effectiveness of participation in practice (see also Davies et al, 2005). One way to analytically categorise it from a sociolegal perspective, as is done below, is to separate the 'law in books' from the 'law in action' or 'planning in practice' (Larsson, 2013). With this paper I study the legally regulated participation from an empirical perspective in the case of developing infrastructure of the third-generation mobile phone system, 3G, in Sweden. Conrad et al (2011) touch on an inherent tension in modern planning that exists between positivist views of planning as an expert discipline and public expectations of democracy. The case of 3G development in Sweden here serves as an interesting field of conflict between national goals for technological development and local land-use planning and governance, in that it demonstrates how different types of knowledge are perceived as legitimate at different levels in the planning system. The point that Conrad et al take up is expressed here in terms of approaches to decision making—*who* decides and based on *what knowledge*—which are of direct importance for understanding the frameworks for public participation and the practical effects of its regulation. The analysis of policy is of key importance when studying the outcome of legally regulated participation in planning. Emmelin and Lerman (2006) have presented a model that can be used for such a policy analysis, based on two axes, one where the central or national level opposes the local, and one where the calculating is opposing the communicative approach. In the following this model is elaborated via planning literature, especially regarding citizen participation.

There are different possible attitudes to what policy analysis should look like or even what a scientific approach towards landscape planning would mean. According to Dryzek (1996), in policy analysis and planning there is an often-seen objectivism, stemming from an Enlightenment legacy and those "who believe in a universal logic of scientific inquiry, which can be applied, with a few emendations, to the logic of public policy" (page 213). This objectivism may arguably lead to an approach of instrumental rationality as a model for human behaviour. Dryzek concludes that objectivism and rationality underpin one side of modernity—one that is "clean, calculating, and homogenizing" (page 213). We need to state this 'objectivist' side of the perspective in order to see and evaluate the logics of much planning and environmental law. But the perspective needs to be complemented by another side, to form a balanced model for a trustworthy assessment. In the 1980s the idea of participation grew strong in planning theory, advocating a deliberative democracy in decision making (Nilsson, 2003, page 57). The communicative view in planning has dominated theoretical discourse about planning since the early 1980s, and has to a large extent been referred to as 'collaborative planning' in UK literature and 'deliberative planning' in US literature (Tewdwr-Jones and Allmendinger, 2002). What today is referred to as *the communicative turn* in urban planning is a range of different theoretical influences mixed together by Habermasian and/or Giddensian thinking (pages 206–207; cf Harris, 2002; Healey, 1992; Wiklund, 2005; Wiklund and Viklund, 2006). Collaborative planning insists on participation rather than representation, and values the process rather than the result and consensus rather than compromise. Healey (1997) sees collaborative planning as a term closely related to democratic concerns of management, opposing more oppressive planning mechanisms and states that "[Collaborative planning] is about why urban regions are important to social, economic and environmental policy and how political communities may organise to improve the quality of their places" (page xii; cf Healey, 2003). It is the argumentative turn that is often opposed to the objectivist and instrumental notions in the policy analysis mentioned above (see Amdam and Veggeland, 1998, part III; Bernstein, 1983; Dryzek, 1996; Eriksen, 1993).

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The argumentative turn in policy and planning, especially as it is extended into discursive democracy, involves not the abandonment of science but rather “a selective radicalization of scientific principles” (Dryzek, 1996, page 229):

“One image of science stresses the value-free investigation of causal relationships according to a fixed set of rules. But another face of science, however much it is observed in the breach, involves free debate and dispute in which the only legitimate force is good argument.”

If we expand the Habermasian notion of ‘ideal speech’ that may underpin the ‘good arguments’, we can allow ourselves to reach for the deliberative ideal—that it is not necessarily the best arguments which will take the lead, but the democratic value base or social norms that decide whether a policy decision is perceived as legitimate or not.<sup>(1)</sup> It is with this notion of planning and regulating in a publicly accepted and legitimate manner that citizen participation is often discussed.<sup>(2)</sup> The question of how to include democratic concerns in landscape planning and how to formalise this through regulation has been a key issue for a long time. The idea has been described as ‘eating spinach’ in the Arnstein (1969) article, drawing up a typology: “no one is against it in principle because it is good for you” (page 216). In detail, however, the issue is difficult. As Arnstein shows, citizen participation reflects the level of control afforded to participants, ranging from feedback-only options to interactive participant self-determination. Arnstein identified the difference between the “empty ritual” and “having the real power needed to effect the outcome of the process” (page 216).

Public participation is, indeed, a broad concept used in various theoretical traditions, aiming at some type of inclusion of members of the public in setting the agenda (see, for instance, Rowe and Frewer, 2004) and can be discussed in terms of consultation, deliberation, and representation—for instance, with the purpose of achieving good governance or a well-functioning environmental assessment. However, the notion of public participation in planning is also, by some, a contested one. Innes and Booher (2007) describe the ambivalence found in literature on public participation. Although participation is sometimes said to be particularly attractive in the environmental sphere because of the historically fraught relationship between democracy and ‘green’ politics (for instance, Lee and Abbot, 2003), and participation is said to form an important content of the ‘good governance’ discourse beginning in the late 1980s or the early 1990s (Doornbos, 2003), much focus is placed on the problems of how to implement public participation. For example, by listening to only the protest groups, it may be that only small sections of the public are represented. This has led to the effectiveness of public participation in science-based policies being questioned (Burgess, 2004; Miller, 2001). Following the early suggestions for how to include the public in decision-making regarding urban or other planning (such as Arnstein, 1969; Davidoff, 1965), much of the focus has been on discussing the problems of public participation (Baum, 1998; Hibbard and Lurie, 2000); and, as Innes and Booher (2007, page 421) conclude, the literature concerning participation (in the US) is dominated by dilemmas, paradoxes, and ambivalence transferred to practitioners.

<sup>(1)</sup>The social foundation of law is widely discussed in sociology of law and by sociolegal scholars. Law is shaped by, and dependent on, the social and economic structures of society (Drobak, 2006; Ellickson, 1991; 1998; 2001; Hydén, 2002; Larsson 2011b; Larsson et al, 2012; Morales, 2003; Svensson, 2008; Svensson and Larsson, 2012; Vago, 2009).

<sup>(2)</sup>Lately, there have been calls for using the increased connectedness to digital networks as a possible means of inclusion and ‘crowdsourcing’ knowledge about how to plan a particular project (Brabham, 2008; 2009; 2010; Conroy and Evans-Cowley, 2006; Evans-Cowley, 2011; Evans-Cowley and Hollander, 2010).

Yearley (2006) discusses the role of public participation in the business of bridging the science–policy divide. This divide, I argue, is relevant in relation to the appealed cases concerning fear of electromagnetic radiation in the development of 3G in Sweden (see also Lidskog, 2008). A reason for more citizen inclusion, which is often mentioned, is that the authorities will probably note less hostility and more acceptance from citizens when there is a high level of participation (Berry et al, 1993). However, the inherent danger in any claimed participatory approach lies in it turning into a mere form without meaningful content, which Evans-Cowley and Hollender (2010) express in terms of ‘token participation’. This happens in programmes that lack depth and tend to “emphasize simple, one-way forms of communication that merely educate citizens to accept decisions that have already been made” (page 399).

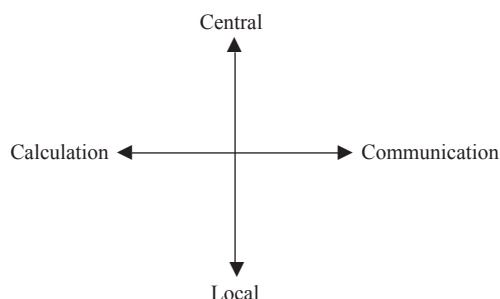
### **A model of decision making based on two axes: central versus local, calculation versus communication**

The briefly mentioned approaches to decision making, relating to who decides and what knowledge this is based on, can be developed in terms of a vertical axis with ‘central’ and ‘local’ as the two poles, as well as a horizontal axis with ‘the calculating’ and ‘the communicative’ rationalities as the two opposites (see Emmelin and Lerman, 2006; Larsson, 2008a; 2009; Larsson and Emmelin, 2007; 2009; Sager, 1994).

#### **Central versus local: who decides?**

Arguably, the postpositivist domination of planning theory in recent years has highlighted the social and political context of theories (Allmendinger, 2002). One of the benefits to Allmendinger’s approach is that it provides a possibly diverse and unique interpretation of planning theory at the national and subnational levels which rejects the idea that local interpretation of theories and their application can be assumed to be consistent with ideas operating at a higher (often supranational) level. By this, he is stressing the importance of understanding the interplay between local and more centralised levels, such as the national level, which is sometimes brought up in planning literature (Liebschutz, 1984; Page and Goldsmith, 1985).

The *first axis* in the suggested model can be described in simple terms by the question of *who decides*, and may include discussions of top-down approaches versus bottom-up approaches in a planning system (see figure 1). This can be applied to an implementation dilemma in a case where a national infrastructure system entails changes to the local landscape, and the outcome of a national development agenda with land-use implications that will rely on implementation in a local context. This is a natural conflict between the national and the local level, where local decisions will cumulatively determine whether a national policy goal can be reached or not. For instance, in the UK there has been a reaction towards what is seen as the increasingly centralised nature of the political system in recent years and concerns about the lack of citizen involvement in political life. This reaction has been called the *new*



**Figure 1.** A model of levels and rationalities in decision making (source: Emmelin and Lerman, 2006).



*localism* (Corry and Stoker, 2002; Pratchett, 2004). Devolving power to local communities and neighbourhoods is not a new idea (Burns et al, 1994; Illsley et al, 1997), but according to Illsley and Coles (2009) it is one that has been gathering significant momentum in recent times. Irrespective of the level of local autonomy in a particular regulatory system, the issue raises the primary question of how to balance the control over spatial planning and the legitimacy of centrally governed development, which is dependent on dispersed deployment. Legally regulated participation plays an important role in this conflict. In practice, the centralised and often expert-based decisions related to instrumental rationality are often dependent on local and often participatory implementation. This is why, from an infrastructure development perspective, local planning and participation can be perceived as ‘getting in the way’ when implementing national policy (Larsson, 2009; Larsson and Emmelin, 2009). Public participation can sometimes be seen as a frustrating obstacle to a swift and effective process. The problems with the introduction of genuine public participation in the planning process are in many ways rooted in the conflict with the parallel goal of an efficient and rapid planning process (Henecke and Khan, 2002, page 34).

Within a framework of rational decision making a common conception of strategic decision making is one of a hierarchical system with an increasing level of detail as you move down to implementation and daily operation. This is termed *tiering* in the strategic environmental assessment literature (Lee and Walsh, 1992). The tiered system is assumed to be internally consistent, top down, and, in the case of environmental issues, based on scientific, calculating rationality (Emmelin and Kleven, 1999; Larsson and Emmelin, 2009; Sager, 1994). The problems of local implementation of national policies have interested political scientists for a long time, as exemplified by Wildavsky’s (Pressman and Wildavsky, 1973) studies and the concept of ‘street-level bureaucrats’ (Lipsky, 1980). How implementation is enhanced, hindered, or deflected by local decision makers within the same policy system has been the main focus. In infrastructure planning the environmental assessment system, in particular, has been blamed for delays and for increasing costs of major road projects (Emmelin and Lerman, 2004). Nilsson et al (2009) have recently studied similar mechanisms for local decisions about waste incineration in Sweden, where national policy is implemented at the local level and there are conflicts with other local concerns.

#### **Calculation versus communication: what type of knowledge?**

Drawn from Habermas’s theory about communicative action, in planning and governance literature the communicative rationality has been seen as the democratic solution to the top-down government of society (Sanderson, 1999). The Norwegian planning theorist Sager (1994) describes a contrast between two fundamental approaches to planning—calculation and communication—suggesting that each approach can be fully rational in its own way, and defining a range of possibilities between the two.

The *second axis* of the suggested model can be described in simple terms by the question of on what *type of knowledge* a decision is taken, and can be viewed against a backdrop of planning theory development in the ‘argumentative turn’ (see figure 1). It is because of collaborative planning being intended to serve both as a framework for understanding and as a framework for practical action that the issue of what type of knowledge is regarded as legitimate in a legally regulated process is of such great interest. It is important to distinguish between the type of knowledge that has to do with an expert-based approach, which is the calculating and optimising character, and therefore often adopts a top-down perspective, and the knowledge type that is based in deliberation or communication, which is probably more often seen in the local context in which national decisions must be implemented. For a wider discussion on approaches to integrating local and scientific knowledge and the challenge

of developing ‘user-inspired’ and ‘user-useful’ management approaches whereby local knowledge is considered alongside scientific knowledge see Raymond et al (2010).

Aspects of public participation in planning have been debated from a number of perspectives in *Environment and Planning C: Government and Policy*—for example, regarding the different ways in which local governments are implementing citizen participation (Yetano, et al, 2010) or outlining some concerns relating to the principles on which small-scale advisory participatory processes are constructed (Davies et al, 2005). For example, Yetano et al (2010) look for three main objectives for citizen participation highlighted by local governments. These related to *consultation* in terms of ‘learning about citizen preferences’, ‘adapting local government initiatives to citizens’ needs’, and ‘improving existing services’ and active participation in terms of ‘fostering citizen influence in decision making’ and ‘achieving better customer satisfaction levels’, as well as an *information stage*, giving an idea of ambitious goals for citizen participation initiatives.

### Research questions

The main purpose of the paper is to better understand how different types of knowledge are perceived as legitimate at different levels in the planning system, and to what extent this affects public participation. To do so, I analyse the legal regulation of a large-scale 3G mobile infrastructure development in Sweden, with focus on the local practice of mast permits. Theoretically, two central approaches to decision making are presented—*who* decides and based on *what knowledge*—which arguably are of direct importance for understanding the frameworks for public participation. Three research questions can thereby be formulated:

- (1) To what extent is public participation formally regulated as well as exercised in practice in the case of developing 3G infrastructure in Sweden?
- (2) What type of knowledge dominates at different stages of the decision-making process in the development of 3G infrastructure in Sweden?
- (3) Is the scale of planning in the specific case likely to have an influence on legally governed decision making at local and regional levels?

As mentioned, the practical outcome of the formalised framework is not always easily predicted, and it cannot be measured by studying the framework alone; in this case the documented permits and appeals are the source for studying the law in action.

### Method and data

The single most important source of data for this study is a database of approximately 250 building permits in the County of Blekinge from the period between 2001 and early 2006 (see table 1). These consist of first-instance decisions at local level and appeals against these. The collection of this database was done in a research programme located mainly at Blekinge Institute of Technology, and some findings have been reported in Emmelin and Söderblom (2002) and also in my licentiate thesis on spatial planning, *Between Daring and Deliberating: 3G as a Sustainability Issue in Swedish Spatial Planning* (Larsson, 2008a).<sup>(3)</sup> When it comes to aspects of how the public could, or could not, participate and affect the 3G development in Sweden, the most important formalised means are found in the building permit process (page 11). Legal sources have been studied, as well as precedent cases to some extent—for instance, to clarify legal boundaries of who has the right to appeal, which is a question that in its detailed content has been defined by case law.

For the analysis conducted at regional level the documents and legislation used consist of 900 so-called ‘12:6 consultations’ carried out by the Stockholm County Administrative Board according to the Environmental Code, as well as utility easement decisions made

<sup>(3)</sup>The research programme is called ‘Tools for environmental assessment, MiSt’, and is headed by Professor Lars Emmelin.



**Table 1.** 3G mast permit processes in the five municipalities in Blekinge County between 2001 and early 2006.

Municipality	Frequency	Percentage
Karlshamn	51	20.6
Karlskrona	82	33.1
Olofström	30	12.1
Ronneby	71	28.6
Sölvesborg	14	5.6
Total	248	100.0

by the National Land Survey (NLS). In addition to this, a survey was conducted with the twenty-one county administrative boards in Sweden during the autumn of 2008, of which twelve replied to the questions regarding 12:6 consultations.

In terms of a possible generalisation of the results from Blekinge to be indicative for all of Sweden, a few notes can be made. The administrative system for land-use planning is nationally regulated. It means that it is the same for the entire country of Sweden. The country is divided into 290 municipalities (twenty-one regions/counties), which have supreme power over most of the planning of the spatial environment, or who delegate matters to the local authorities, under the supervision of the county administrative board. Blekinge County is representative on a national level from several perspectives (page 11). It is the most industrialised region and the most densely populated area outside the three big city areas. The region of Blekinge has a coastline with an archipelago as well as a rural inland, containing valuable culture and nature. The urbanised areas of Karlskrona, Karlshamn, and perhaps Ronneby are representative of many medium-sized urban areas in Sweden.

### **The case: the Swedish 3G infrastructure development**

Sweden has a strong local dominance in the spatial planning system. The outcome of a national development agenda with land-use implications will therefore rely on implementation in a local context. The infrastructure for 3G in Sweden is governed by mainly two pieces of legislation with differing histories and partly differing purposes, the Planning and Building Act (PBA) (1987:10) [translation of Plan- och Bygglag (1987:10)] and (2010:900) [translation of Plan- och Bygglag (2010: 900)] and the Environmental Code. The PBA processes are municipal, whereas the environmental aspects fall under the county administrative board or the Environmental Court. Two major issues relating to 3G infrastructure development were health—for example, related to electromagnetic radiation—and also aesthetics or visual amenity. This has been the case in Sweden (Larsson, 2008a; 2013), and the UK (Allmendinger, 2007; Drake, 2006), including Scotland (Law and McNeish, 2007), and other countries. The case of 3G development in Sweden shows the conflict between authoritative scientific knowledge and local knowledge, which has been addressed in general by writers such as Feyerabend (1987) and Wynne (1996), and addressed in this specific case by Larsson (2008a) and Larsson and Emmelin (2009).

The local implementation issues in the Swedish 3G infrastructure development cannot be understood without some knowledge of the tensions and details of the overall national setting. The infrastructure roll-out formally started in December 2000 in Sweden, pursuant to which applicants had received licences, and continued until 2006. At the time of the decision about the licence terms for the development of the 3G infrastructure, the goal of the Swedish government was to maintain Sweden's position as one of the leading nations within information technology (IT) and telecommunications (SOU, 1999:85). However, the years following the initial decision were filled with protests from people fearing the radiation and landowners

who wanted to be left alone. Many felt they had been disregarded by the central decision to roll out infrastructure, when it was uncertain whether it would be beneficial (Emmelin and Lerman, 2004, pages 85–87; Emmelin and Söderblom, 2002, pages 35–37; Larsson, 2008a, pages 142–143). No comprehensive assessment was made of the entire system; the infrastructure roll-out was effected through one permit for each mast, at local level, providing the administrative system with an extreme challenge, and causing unexpected environmental and social outcomes as a result from the lack of a comprehensive assessment.

After the initial allocation of spectra by means of proposed criteria in a selection process, the so-called ‘beauty contest’, four operators were given licences to build the infrastructure for 3G. Within three years the four operators were to build competing systems to cover 8 860 000 people, which at the time was about 99.98% of the population (Post and Telecommunications Agency decision of 16 December 2000). An estimate stated that a reasonable area coverage would be around 170 000 km<sup>2</sup>, or about 41% of the total Swedish surface area (Björkdahl and Bohlin, 2003).<sup>(4)</sup> The coverage by the end of the original licence period was significantly lower than the promised coverage, at between 66% and 74% of the promised 8 860 000, with only three remaining operators still participating. The first operator did not complete the required coverage until 1 December 2006, followed by the two remaining operators on 1 June 2007. The municipal permit processing was blamed for the delay, a reason that reportedly “could not have been foreseen”, and which helped the operators avoid sanctions from the responsible agency [the Post- och Telestyrelsen (PTA)—the Swedish Post and Telecom Authority].<sup>(5)</sup> The interactions between the PTA and the licence-winning operators, resulting in a postponed deadline for the fulfilment of the licence conditions, have been studied from a sociolegal perspective, showing in Larsson (2008b) the PTA as being part of the ‘game’. These issues at national level are important for the local and regional levels, since the development of the national system was heavily dependent on local and regional implementation. A feature that was perhaps surprising was that environmental aspects were not handled at national level but assessed locally in the building permit process, as well as in the regional 12:6 consultations within the county administrative boards. This is why the municipal permit process holds many of the keys regarding environmental management and planning, and why the design has been criticised for its lack of comprehensive assessment (Emmelin and Lerman, 2004, pages 78–79; Larsson, 2008a, pages 128–131).<sup>(6)</sup>

Electromagnetic radiation has been a widely debated issue during the infrastructure roll-out in Sweden (Larsson, 2008a, pages 80–88) as well as in several other countries, such as the UK (Allmendinger, 2007; Burgess, 2004; Drake, 2006; 2010; Stilgoe, 2007) and Denmark (Kristiansen et al, 2009), although it has been debated differently in different countries (Burgess, 2002). The magnitude of the issue was not foreseen before the roll-out. There has been a public debate, the media have been very much involved, nonprofit organisations have been formed, webpages established, and numerous opinion articles produced in protest against the 3G development in Sweden. Much of this is related to the feared hazardous effects, or health problems, of the electromagnetic radiation from the base stations. The

<sup>(4)</sup>The national level and the initial stages of 3G development in Sweden have been studied from a planning perspective by Emmelin and Söderblom (2002) and from a sociolegal perspective by Larsson (2008b); and other studies have focused on the licence allocation process (Andersson et al, 2005; Hultkrantz and Nilsson, 2001).

<sup>(5)</sup>The Larsson study, however, shows that a slow municipal permit processing cannot explain the lack of coverage in some areas of Sweden (Larsson, 2008a, pages 68–69 and 125–127).

<sup>(6)</sup>The 3G infrastructure development has been further studied from a sustainability perspective by Larsson (2008a), where participation is discussed in relation to social sustainability, and by Larsson and Emmelin (2007).

perceived lack of participation in the decision-making process of where to erect the masts has led to the masts being sabotaged or simply dismantled by angry 3G antagonists, either due to a general objection to the technology and its effect on the landscape or due to a more local NIMBY-approach.

The Swedish Radiation Protection Authority has been criticised for the way it has handled, or not handled, the issue. Despite the information from the Radiation Protection Authority and other national agencies, during the roll-out municipalities were facing the radiation fear in the shape of resistance towards mast construction, not least in the form of appeals against mast building permits. Several municipalities responded to the public debate by planning 'mast free zones' or 'radiation free zones', either as a result of scepticism or as a way of handling the radiation issue (Emmelin and Söderblom, 2002, pages 31–32).<sup>(7)</sup>

### **Participation at regional level**

The regional level includes the county administrative boards and the public authority managing the Swedish surveying system, the NLS. The county administrative board is both the authority which decides about activities that fall under chapter 12, section 6 of the Environmental Code (1998:808) [translation of Miljöbalk (1998:808)] and the first instance of appeal on matters concerning municipal building permits. The NLS has nationwide responsibility, but the most common contact point for the public is via one of the twenty-one NLS agencies that follow the county administrative map.<sup>(8)</sup>

The responsibility to report 3G masts to 12:6 consultations is parallel to the process for building permits. This means that, even if the mast gets a municipal building permit, the site can be prohibited by the county administrative board to protect the 'natural environment'. This lack of coordination has been criticised for showing bad legislative coordination, but also a manifestation of "competition between professions as well as governmental authorities, and is an expression of the distrust towards municipal permit processes that exists within the environmental sector" (Emmelin and Söderblom, 2002, page 28). Since many 3G mast sites are applicable to the 12:6 consultations, the participative aspects at the regional level are tied to the involvement of this particular legal instrument. The operator in question can appeal a decision by the county administrative board that prohibits the construction of a 3G mast to the Environmental Court.<sup>(9)</sup>

The right to appeal a decision based on the 12:6 consultation requires that the person is affected by the decision in the sense of being the property owner, or have some special right to the land, such as renting it. This can be compared with a case in the Supreme Administrative Court, where it was concluded that anyone who owns property that is affected by a decision according to the Environmental Code has a right to appeal the decision if it negatively affects

<sup>(7)</sup>For an analysis of mobile phone health risks as an example of the 'public understanding of science', with an explanation based around the coproduction of scientific and social order, see Stilgoe (2007). For an in-depth study into the attitudes and beliefs of one local protest see Drake (2006).

<sup>(8)</sup>The county administrative board can prescribe the person responsible for the activity to take precautions or even forbid the activity. This duty to report has a wide application, and the focus lies on the impact on the natural environment. The activity can be prohibited by the county administrative board "in order to protect the natural environment" (12:6, section 4). The purpose of the duty to report for consultation is, according to the preparatory work of the Environmental Code, that it creates a possibility to see what activities are performed in sensitive areas, and to ensure that activities hazardous to the natural environment are prohibited. This can steer anyone exercising the activity away from sensitive areas to areas where there is no duty to report (Prop 1997/98:45, page 304).

<sup>(9)</sup>If an operator wants to construct a mast on another person's property, a County Administrative decision has no legal implications when it comes to building permit or utility easement. This means that, even if the county administrative board sees no hindrance for a mast from a natural environment point of view, it does not necessarily mean that the Planning and Building Act permits the mast.

his or her legal status—for instance, by limiting the possibility of using the property (RÅ 83 2:85).<sup>(10)</sup>

### The practice

The number of mast sites that have been prohibited by the county administrative boards pursuant to the 12:6 consultations is very low. Only 8 sites out of the 900 reported to the Stockholm County Administrative Board during the first three and a half years of the roll-out were prohibited pursuant to chapter 12, section 6 of the Environmental Code, which is less than 1%.<sup>(11)</sup> The consultation decision ‘concerns’ people who have some kind of special right to the property—for instance, the owners. They have a right to be heard before the decision is made.<sup>(12)</sup> The term ‘consultation’ could generate participative associations; but, despite this, the assessment is made at regional level, by the county administrative board, and the public has little say in how the decision is made, which is corroborated by the survey (see also Larsson, 2008a, pages 76–78).<sup>(13)</sup> Other than this, the consultation has an outspoken environmental conservation emphasis, and radiation issues are not found to be a part of the decision. Radiation is defined as nonhazardous as long as it is falls below the limits set by the Swedish Radiation Protection Authority.

The other permit of relevance to 3G mast construction at regional level is utility easement under the Utility Easement Act (UEA) (1973:1144) [translation of *Ledningsrättslag* (1973:1144)].<sup>(14)</sup> Utility easement means a right for the possessor of the utilities to use the property of others in order to erect power lines or communication cables in the public interest, for example. The utility easement concerns power lines or cables that are intended for public purposes.<sup>(15)</sup> The utility easement is tried and decided by the NLS, and attaches to the property.<sup>(16)</sup> The NLS performs an assessment of its own, regardless of whether there is already a municipal permit to build the mast. The building permit does not necessarily mean that the utility easement decision is positive. The decision by the NLS determines the level of compensation the owner of the property is allowed.<sup>(17)</sup> Utility easements can be granted against the property owner’s will. The UEA was changed during the infrastructure roll-out to include 3G masts explicitly from 1 August 2004 in order to “facilitate the roll-out” (Prop. 2003/04:136,

<sup>(10)</sup> RÅ 83 2:85. In a case from the Environmental Court of Appeal (Case M 7839-03, 8 February 2005) a person appealed the Environmental Court decision to allow a 3G mast in accordance with chapter 12, section 6 of the Environmental Code. The person had no connections to property affected by the decision, and therefore was not found to have the right to appeal the decision with reference to public interest.

<sup>(11)</sup> The survey of the county administrative boards reveals that the operators (or consultants on behalf of them) and the administrative boards are often able to negotiate about the exact locations, so that the mast site will not be located in the most sensitive areas. Another reason for the low number of prohibitions is the fact that the reporting operators receive signals beforehand on what the decision will be and can withdraw the application when they can expect a negative decision. This means that direct conflicts between the operators and the county administrative boards are often likely to be avoided, and a low number of prohibitions can be seen in the statistics. According to the county administrative board survey, the statements of the county administrations’ administrative officers responding to the question of how often they have cases of appealed 12:6 decisions were of the type ‘a few’, ‘maybe one during the last few years’, or ‘I don’t recollect any’.

<sup>(12)</sup> As in the case in the Environmental Court of Vänersborg (M 5148-04, 22 April 2005), where the decision was appealed because the county administrative board had not communicated the decision to the property owner, which led to the case being redirected to the county administrative board.

<sup>(13)</sup> ‘Consultation’ is translated from the Swedish *samråd*.

<sup>(14)</sup> *Ledningsrättslagen*.

<sup>(15)</sup> Section 2, point 1 of the UEA.

<sup>(16)</sup> This handling is called *förrättning* in Swedish.

<sup>(17)</sup> Sections 13 and 22 of the UEA.

pages 9–10). By September 2006, fewer than 100 utility easement cases had been decided by the NLS in relation to 3G masts in Sweden. The data are not easily collected, since the NLS does not differentiate between 3G or GSM or other telecommunication masts.<sup>(18)</sup> The administrators of the NLS dislike the unpleasant situation of being in the middle of such a clear conflict as the one between landowners who do not want a mast site on their property and the operator who applies for utility easements to put up a mast on the same property. The landowners often find that the utility easement results in low compensation levels.<sup>(19)</sup>

The possibility of a utility easement decision for an operator who wishes to erect a mast on another person's property strengthens the operator's position in contract negotiations with the landowner. This could mean that a number of cases never surface at the NLS, since the landowner knows that the possibilities of avoiding the mast are slim, and the compensation from the utility easement decision is low.<sup>(20)</sup> Even if utility easement conflicts in the 3G roll-out in Sweden have resulted in few legal cases, many issues regarding compensation levels are probably solved through negotiation. But since the changes in legislation have changed the negotiation position for the landowners, it is likely that they accept lower compensation levels than would have been the case if the utility easement alternative was unavailable to the operators. The compensation level is an interesting issue in itself with regard to the Expropriation Act, the legal regulation controlling the compensation levels decided in cases of utility easement (Larsson, 2008a, pages 158–161). During 2006, the Court of Appeal (appealed Land Court decisions) decided in three cases regarding compensation for GSM or 3G sites.<sup>(21)</sup> All three were appealed to the Supreme Court, which set the compensation levels at between approximately €1100 and €28 000.<sup>(22)</sup> The participation in the utility easement process is, of course, necessary for the landowner in question, but it is likely that reluctant landowners will wish they were able to decide on their own whether or not to have the mast site on their property.

### Participation at local level

It is the local level of the planning system that has attracted the most debate, the most protests, and the most court cases relating to the Swedish 3G development.<sup>(23)</sup> In the process of constructing 3G masts the operators often need to apply for a building permit at the municipal building committee.<sup>(24)</sup> The PBA states that, including radio and telecommunications aerials or towers in the statement, "buildings shall be placed and designed in a suitable manner with regard to the townscape or the landscape and the natural and cultural values of the site."<sup>(25)</sup>

<sup>(18)</sup> A few examples can, however, be mentioned regarding the number of cases, which in Stockholm had been around 8, in Uppsala 1, Kalmar 0, Skåne 12, Västra Götaland 7, and Jämtland 1, until September 2006.

<sup>(19)</sup> Interview with Carl-Erik Sölcher, *Lantmäteriet*, 27 September 2006.

<sup>(20)</sup> From 1 August 2010 new compensation rules are in force for expropriation and other situations where the property is occupied by force, including utility easement (Prop. 2009/10:162; SOU 2008:99).

<sup>(21)</sup> Skåne and Blekinge Court of Appeal, Case Ö 152-06, 24 October 2006, Göta Court of Appeal, Case Ö 1719-06, 22 August 2006, and Svea Court of Appeal, Case Ö 4136-05, 20 November 2006.

<sup>(22)</sup> Supreme Court Cases Ö 4636-06, Ö 3780-06, Ö 5083, decided on 15 May 2008.

<sup>(23)</sup> Sweden is divided into 290 municipalities, each with mandate over land-use and water use planning and acting as the permit authority regarding numerous construction practices, including the construction of many 3G masts. The municipal government consists of elected politicians and salaried employees.

<sup>(24)</sup> See chapter 1, section 4 of the PBA.

<sup>(25)</sup> The building committee has to communicate that it has received a permit application to concerned parties, such as neighbours [8:22 PBA, the Administrative Court Procedure Act (1971:291, sections 10–12), [translation of *Förvaltningsprocesslag* (1971:291)], which can attach a statement regarding their opinion of the permit application. This material forms part of the decision material of the committee.



If someone, for instance a neighbour, wants to appeal a mast permit, this is done to the county administrative board.<sup>(26)</sup> According to general administrative principles, the right to appeal is available to those who are concerned by the decision, if it goes against (has a negative result for) them.<sup>(27)</sup> In the permit processes the key is whether the complainant is *a concerned party* or not.<sup>(28)</sup> And this refers to ‘concerned’ in its legal sense. If the complainant is found to be a concerned party, the appeal will be tried in substance. If not, the appeal will be dismissed, irrespective of how legitimate the appeal would have been *in substance*.

When it comes to defining the ‘concerned party’, the Blekinge permit process data show that the line is sometimes hard to draw for the county administrative board. About one out of five of the 3G mast building permits were appealed (49 of 248). This includes both operators’ appeals against the municipality’s rejection of a building permit application as well as individuals who do not like the municipal decision to approve a building permit and decide to appeal this decision (see table 2).<sup>(29)</sup>

**Table 2.** Appeals against local mast 3G permits in the county of Blekinge 2001–05.

Permit finally granted	No	Yes	Not yet decided	Total
Appealed by nonoperator	1	36	2	39
Appealed by operator	7	3	0	10
Not appealed	44	141	14	199
Total	52	180	16	248

### Appeal is futile

When a permit has been granted, an appeal has hardly ever led to a permit being revoked, no matter the reason. Out of the thirty-seven appeals raised by neighbours or other nonoperators, only one led to a permit being denied in the end (< 3 %).

The permit processing data from Blekinge show that, even if the concerned parties are allowed to participate in terms of right to appeal, this hardly ever changes the final outcome if the process goes above municipal level (see table 2). Of the thirty-nine appeals from nonoperators in Blekinge, thirty (77%) mentioned a fear of radiation as part of the reason for appealing (see table 3). This makes it a very common reason, indicating the importance and range of the radiation issue in Blekinge.

**Table 3.** Fear of electromagnetic radiation as reason for appeal.

	Not due to electromagnetic radiation	Electromagnetic radiation is one reason	Lacking	Total
Appealed by nonoperator	5	30	4	39
Appealed by operator	10	0	0	10
Total	15	30	4	49

<sup>(26)</sup> Chapter 13, section 2 of the PBA.

<sup>(27)</sup> See section 22 of the Administrative Procedure Act (1986:223) [translation of Förvaltningslag (1986:23)].

<sup>(28)</sup> See RÅ 1992, ref 81, regarding appeals of permit to build a wind power station, and RÅ 2005, ref. 36.

<sup>(29)</sup> Out of the fifteen appeals that were dismissed (the factual matter was never tried because the county administrative board did not find the complainant to be a party concerned in a legal sense) the same person made twelve appeals.



Permit appeals under the PBA based on fear of electromagnetic radiation are in practice always rejected in court. The courts state that the radiation cannot be said to be dangerous, meaning that it refers to scientific evidence not showing that the radiation is dangerous. Legally, which also means most importantly, the fear of radiation has met with no recognition. Since the issue has been so widespread among the general public, many permits has been appealed for this reason, which means that the roll-out has been delayed to some extent, even though the permits have not been denied in the final court decision. It is possible that public fear has affected local decision making to some extent as well.

Summary of results

Not everyone could participate in the decision or the permit processes of the infrastructure roll-out. Public participation is almost exclusively steered towards the ‘one-mast-at-a-time’ trial process that the legal system provides. During roll-out this means that the opportunities for taking part in and affecting the 3G infrastructure depend on whether the complainant is legally defined as a concerned party in the assessment of several or single masts. This concerns the 12:6 consultations, the utility easements, and, most importantly, the building permits, and is often connected to the possession of property impacted on by a mast site (table 4).

Table 4. Summary of key results: how the public can affect 3G mast permits.

	Law in books	Law in action
Regional	Concerns appeals of 12:6 decisions, utility easement appeals, and is tied to being a concerned party, which generally means being an owner of property next to the mast site (or of the mast site itself), or the applicant.	In practice, this rarely concerns anyone outside the county administrative board and the operators when it comes to 12:6 consultations. There are only a few appeals out of several thousand decisions. The utility easement is likely to be negotiated; the power relationship is asymmetric due to the operator being likely to expropriate the land anyway.
Local	Concerned parties can appeal a building permit granted, which generally means being an owner of property next to the mast site or being an applicant. Concerned parties can make a statement regarding building permit applications.	Appeals rarely change the outcome of permits granted. Appeals based on fear of electromagnetic radiation are <i>always</i> rejected. There are examples of when statements, early in the planning process—before it has been ‘juridified’—have changed the location of the site.

Analysis

As outlined above, the purpose of this paper is to shed some light on how different types of knowledge are perceived as legitimate at different levels in the planning system, and to what extent this affects public participation. Theoretically, I have argued for a model based on two central approaches to decision making, where the central–local axis has formed the question of *who* decides and the calculation–communication axis has formed the theory on planning-approach formulated in the question of *what knowledge* is to govern the actual decision. In order to reach this purpose, I formulated three specific questions which I repeat below, with an analysis.

- (1) To what extent is public participation formally regulated as well as exercised in practice in the case of developing 3G infrastructure in Sweden?
- For the public to participate the public must have the opportunity to change or affect a public planning decision. If not, this is no more than a token exercise [see Evans-Cowley

and Hollander (2010), mentioned above]. Participation at local and regional level in the case of 3G development in Sweden is tied to being a 'concerned party', which generally means being a landowner or having some other direct connection to a property in the close vicinity of where a mast is to be constructed. The consequence of this is that you have to activate your participation within certain time frames, and in regard to only predefined matters. Although the municipalities do not clearly acknowledge fear of radiation as a reason for denying a permit, the examples above show that the municipal planning process is open to the opinions of individuals who are affected by mast sites. Listening to concerned parties before the decision lies within the existing law, but acknowledging fear of radiation lies outside the existing law in the case of 3G in Sweden. However, the examples indicate that the issue of exactly where this line is drawn is not the most pressing issue in local planning. In the legal process which may follow an appeal, however, appeals based on fear of radiation are always rejected, which demonstrates the separate ways in which the legal decision is made.

(2) What type of knowledge dominates at different stages of the decision-making process in the development of 3G infrastructure in Sweden?

It is likely that some local disputes can be solved by the involved parties communicating. For instance, a mast can be relocated to a less disruptive place for the neighbours, and hence never show up in the appeal data. From this perspective the appeal data show cases that could not be solved communicatively, where the opinion of the appealing party differs too much from the views of the operators and the municipality which legitimates the building permit decision under the PBA and legal practice. As regards municipal decisions, neighbourhood opinions have often been taken into account. There are examples of how neighbour objections are a factor in a 'negotiation' of the exact location of the mast site.<sup>(30)</sup>

(3) Is the scale of planning likely to have an influence on legally governed decision making at local and regional levels?

The presentation has so far concerned the right to participate mostly in the sense of having a right to appeal, and where this line is drawn legally. Another aspect of the law in books is that this right to appeal can be questioned if the public participation never affects the decisions taken. Are they, to use the title of the Conrad et al (2011) article, 'Hearing but not listening'? In that case it risks looking like a right, without functioning as one, and the already taken decision to roll out infrastructure for an extreme mobile coverage may end up in a top-down information strategy aiming at only convincing the public that the decision is for the best—as a 'token participation' (see Evans-Cowley and Hollander, 2010, page 399). People are let in, but never listened to. Such a state of law can be investigated and revealed only in its application. The permit process data from Blekinge show that, even if the concerned parties are allowed to participate, their appeals hardly ever change the final outcome. When the permit has been given, an appeal, no matter for what reason, has hardly ever led to a revoked permit. This is a sign that the process may include people, may give them formal access, but does not take any notice of what they say. It shows that what the complainants regard as an issue is rarely acknowledged as an issue legally.

<sup>(30)</sup> It is seen, for instance, in the cases of Tararp 3:5, where the permit was denied partly due to the notifications from the neighbours (although the operator appealed and finally got the permit), and Uttorp 4:2, where the neighbours referred to fear of radiation, the negative effect on the view of the landscape, and an assumed decrease in property value. The operator responded and suggested moving the site by 100 metres, and the building committee granted the permit after this. In the case of Färmanstorp 4:1 a neighbour objected that the mast was too close, the radiation could be hazardous, and the property value might decrease. The operator responded, altered the site location, and the municipal building committee stated that the permit could be granted after the relocation, as the conditions in chapter 3 of the PBA were now satisfied.

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**Who decides: central or local decision making?**

The implementation of a national system for infrastructure entails changes in the local landscape, and the outcome of a national development agenda with land-use implications will rely on implementation in a local context. This is a natural conflict between the national and the local level, where local decisions will cumulatively determine whether a national policy goal can be reached or not. This raises the primary question of how to balance the control over spatial planning and the legitimacy of centrally governed development, which depends on dispersed deployment. In the 3G infrastructure development the argument that municipal planning was an obstacle to rapid development was voiced at a very early stage of the development, with limited actual evidence. As Larsson (2008a; 2008b) has shown, blaming slow municipal planning for standing in the way served as a convenient excuse for the operators to get out of the commitments made in the licensing process at the height of the IT bubble, no matter how false the premise was.

The mast-by-mast participation in the case of 3G development in Sweden can be analysed in relation to public participation and its legal formalisation. In relation to a wider context, the single-case participation may bypass participation in solving problems of a more structural character. And some issues in the case of 3G are of a structural nature: many have protested against the rollout as a whole, which is tied to the extreme coverage of the infrastructure, and its landscape impact and the feared hazardousness of the radiation. It is safe to say that many of those protesting have wished for more scope to participate and affect the infrastructure roll-out, far beyond the individual cases. The 3G case shows a system that has been governed in a way which, on one hand, meant that it permits reduced operator investment will and ability—contrary to formal agreements and law—and, on the other hand, puts pressure on the legal system and municipal permit processing. This is in part contradictory. From a development perspective, public participation becomes nothing more than an irritating element and an obstruction to the roll-out. The result of such an approach is that the issues that are most important to the public are likely to be bulldozed over, and the result can be perceived reduced legitimacy of the legal order, which in some cases has led to dismantled masts and sabotaged sites, in the case of 3G development in Sweden.

**Knowledge types: calculation or communication**

The local building permit process shows elements of being both inclusive and exclusive, depending on how far the 'juridification' of the specific case has gone. A way of analysing decision-making rationality in terms of who decides and what type of knowledge is used is to place the studied data onto a central–local axis and a calculating versus a communicative view (see Emmelin and Lerman, 2006; Larsson, 2008a; Larsson and Emmelin, 2007; Sager, 1994). Viewed from the perspective of what matters are allowed to be part of the participative process, the decision making at municipal level bears elements of weighting or balancing of legitimate but not necessarily compatible interests (communicative). The local decision is seen as good and legitimate if it is reached in a process where interests are explicit and weighted. Although methods may vary over a wide scale, from strictly rationalist to deliberative, the ultimate decisions in spatial planning are political. This means in simple terms that a problem is a problem if one of the concerned parties thinks it is, which is the case with fear of radiation in a local context. The centralised decision of how radiation shall be taken into account in the 3G infrastructure development is instrumentally rationalistic and calculating (Swedish Radiation Protection Authority standards, higher court decisions) rather than communicative or deliberative [note the inherent 'objectivism' in this perspective—see Dryzek (1996), mentioned above]. From this perspective the issue of whether or not the public fears the radiation is irrelevant. From this perspective the public should not fear the radiation, since expert judgment claims that it is not hazardous. This relates

to the appealed permit processes above municipal decision-making level. On a local level the participatory aspects are stronger. The municipal building committees tend to consider neighbours' fears or sceptical attitudes towards the radiation as a problem worth taking into account in the local planning. This sometimes leads to a refusal of a 3G mast building permit. These communicatory features of the planning process point the local planning towards the more deliberative planning paradigm [for more on this see Emmelin and Lerman (2006), Larsson and Emmelin (2007), and Larsson (2008a)]. These features fade, however, as the appeals reach the higher courts, and the 'black box' of law closes in on the decision making and expert knowledge takes over as the more heavily weighted knowledge.

Such an example of lack of participation in practice may add to a loss of public confidence in political and administrative performance which some scholars have witnessed (Welch et al, 2004). The problem displayed by the appeals handling processes in the case of 3G development in Sweden is, however, not the problem of policy implementation being hindered by local handling processes "shaped by local-scale actors, cultures, routines, and decisions", as is the focus in Nilsson et al (2009). Nor is it focusing the street-level bureaucrats (Lipsky, 1980) in the sense of revealing in what way national policies are altered in its local implementation. On the contrary, the dilemma or focus in this study lies in looking for the balance between two interests that may be in conflict: one national development agenda tied to a specific technology on the one hand, and local governance and public participation and inclusion in the process, on the other. The handling processes at least suggest that the latter process is affected by the former—that is, the development agenda may have led to a pressure on the legal system, when faced by appealed decisions, to exclude complainants from having a say in the processes of mast location. This is especially clear when it comes to appeals relating to fear of electromagnetic radiation.

This addresses the broader question of the relationship between science and the citizen, which Irwin (1995) has addressed within the field of environmental risks. As described by Lidskog (2008, page 78):

"There is a clash between science's universal and 'decontextualised' character and lay people's local understandings. From this science-centred perspective, there is a need to educate citizens, which is believed to lead to greater acceptance for a (scientifically guided) policy. Thus, science is placed at the centre of policy-making, whereas the public are seen as passive spectators, as witnesses rather than participants."

Irwin is critical of this understanding, claiming that science is not a homogenous practice. He claims that one reason for a clash between science and the public can be found in science's ambition to create abstract, universal, and formalised knowledge, which ignores the more context-specific, contextually generated understanding of lay people. The way forward suggested by Irwin is to adopt a symmetrical understanding of different kinds of knowledge, and to start from the public understanding of a certain problem rather than a science-centred view which often alienates the public. This viewpoint, in relation to this study, is particularly interesting in the case of electromagnetic radiation from 3G masts. The decisions regarding electromagnetic radiation are, in the case of 3G development in Sweden, clearly expert based, instead of deliberative. Different norms seem to reach legitimacy at different levels of the planning and environmental administration. This may be illustrated by the question of *where* in the permit process *what* knowledge is legitimate.

#### **Suggested future research**

The case of 3G development in Sweden shows features of a more general interest which could be studied in a comparative approach to similar development projects. These could concern the interplay between national policy and its local implementation. In a Swedish context a fruitful comparison suggested is wind power development (Larsson and Emmelin, 2009;

see also Larsson, 2011a), which is a research project in process. The case of wind power development in Sweden shows similar features to the 3G development in terms of conflicts between national policy and the local administrative level. The local level may be under similar pressure from the national policy and politics, and both cases concern a development having a major impact on the local landscape. This opens up for the study of a complex set of interrelated topics concerning participation in planning, rights connected to property, environmental as well as aesthetic issues, and to what extent political and economic pressure can affect decisions governed by principles of legal security.

## Conclusion

The case of developing infrastructure of 3G in Sweden has served to display how legal formalisation in a decision-making process, going from a deliberative task of local planning to a judicial one, can alter what type of knowledge is regarded as legitimate. The theoretical model in the paper serves as a tool not only to detect where on an axis between calculating and communicative a decision is made but also to see if what is regarded as valid knowledge shifts between different levels in the planning system. The public participation in the 3G infrastructure development was heavily dependent on the complainants being concerned parties, which generally means being an owner of property next to the mast site, in a system fractioned into mast-by-mast assessment. On the important local level there are examples of when statements have changed the location of a site—however, appealing building permits rarely ever changes the outcome of permits granted, and appeals based on fear of radiation are always rejected. The juridification of a conflict meant a development from a deliberative approach, where any concern is heard, to a calculating and expert-based one, where the general stance on a particular topic (such as whether or not the electromagnetic radiation from mobile masts is hazardous) is applied. This means that *what* knowledge is legitimate depends on *where* in the permit process it is presented.

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