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Readiness and planning for more wind power: Municipalities as key actors implementing national strategies

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ABSTRACT

In the global context of rapidly developing wind-power technology, local governments have to balance local interests with larger scale targets when implementing national and international strategies. An implication of a new Swedish national strategy for wind-power development is considerable intrusion into natural resource-rich northern landscapes, where municipalities already strive to manage diverse surface demanding and legally valued land-use interests. Municipalities will thus play a key role in wind-power development. Results of our survey suggest that most municipalities have functioning wind-power plans, linked to their municipal comprehensive planning (MCP). However, so far, relatively few wind-power farms have been established, and municipalities have rarely used their right to veto, suggesting that most have not yet experienced significant problems linked to wind-power development. The municipalities rely on their right to veto, and only a third highlighted planning as a tool for handling the increasing demand for wind-power developments. Legislative changes regarding the right to veto and the status of MCP could affect local self-government considerably. Wind-power development could have major consequences for local landscapes and governments, and a municipal-wide policy regarding future wind-power development and MCP as a mediating tool must be secured to balance local interests with national ambitions.

1. Introduction

High-level pan-national (UN, 2019) and national policies promoting fossil-free, climate-neutral and sustainable energy production and consumption are driving a fast-growing technology for wind-power development (IRENA, 2021). However, the placement of wind turbines affects the surrounding landscape and settlements (Westlund and Wilhelmsson, 2021), including the natural and cultural resources, current and future land use and tangible as well as aesthetic and emotional values (Johansson and Laike, 2007). Whereas positive impacts are often observed at global and national scales, conflicts and negative impacts are usually experienced locally (as shown by Avila (2018) based on 20 case studies from across the Americas, Africa, Asia and Europe).

In many national contexts, wind-power developments are sited within a municipal area. Accordingly, the local political view regarding wind-power development is given substantial weight in the decision-making process, regardless of which authority (municipality or other) is handling the licensing (Saglie et al., 2020). Fair consideration of local interests is crucial for local acceptance (Jenkins et al., 2016). Municipalities therefore have a key role in balancing local considerations and the views of local stakeholders and residents with larger scale (international and/or national) goals and strategies (Bjärstig et al., 2018), regarding both policy and practice, i.e. in the planning as well as decision-making process (Pettersson et al., 2010). As a result, the implementation of international and national goals and strategies on sustainability, climate and energy becomes a local municipal government and administration responsibility (Gustafsson and Mignon, 2020). However, mediating between international and national goals and strategies and local visions and practices can be challenging (Hodson and Marvin, 2012).

Gustafsson and Mignon (2020) highlighted the lack of empirical studies concerning the role of municipalities as intermediaries and the choices they make. Based on this and other research (Wretling et al., 2018), we suggest that municipal planning, specifically municipal comprehensive planning (MCP), has the potential to be a strategic and mediation tool (Bjärstig et al., 2018). Despite some criticisms, local spatial planning led by the public sectors (such as MCP) is vital (Mintzberg, 1994) for the re-scaling of international and national issues and goals (UN, 1992; World Commission on Environment and Development, 1987) to the local level (Albrechts, 2004), not least regarding the building of major renewable energy infrastructures (Natarajan, 2019).

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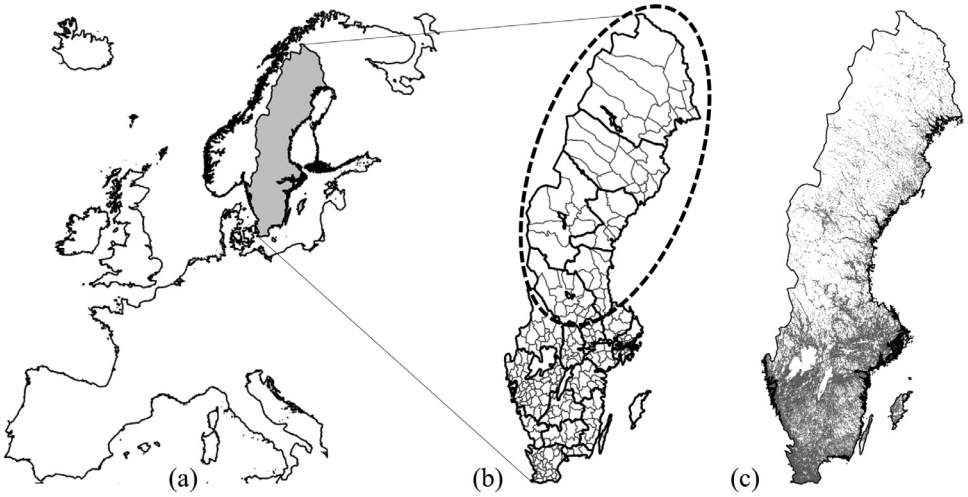

Fig. 1. (a) A map of Europe highlighting Sweden in light grey; and (b) a map of Sweden showing the 21 counties (thick black lines) and 290 municipalities (thin grey lines), with the six large counties of northern Sweden encircled. (c) The population density (increasing from light to dark grey) of Sweden; in the northwest the population is relatively sparse (Statistics Sweden, 2021).

In the Swedish context, MCP has been shown to cover virtually all aspects of such developments (Thellbro, 2017).

In accordance with Saglie et al. (2020), we have addressed the understudied area of the municipality's role in wind-power development (to some degree previously studied by Liljenfeldt (2015) and Khan (2003) in a Swedish context and by Darpö (2020) and Pettersson et al. (2010) in a Nordic context). In particular, have we focused on the municipalities' formal strategic spatial planning regarding wind-power development within their boundary, mainly through MCP, and their right to veto the development of wind power. We examined the municipalities based on their key roles in the wind-power licensing process and as intermediaries between the interests at different levels (international, national, regional and local) and the diverse values held within their local community setting. The aim was to increase our understanding of whether and how municipalities, as local-level key actors, are planning strategically for wind-power development, using Sweden as a case study. We analysed which aspects of the wind-power plans were considered useful, and whether the municipalities are prepared to implement the increasingly demanding national (and international) strategies for wind-power development within their local context.

2. Contextualization of the Swedish case study – central aspects of the democratic system and local self-government

Local government is relatively strong in Sweden, and trusted by both the citizens and national government (Lidström and Madell, 2021). The local government comprises 290 municipalities, and the regional government 21 counties (Fig. 1). Regional responsibilities include hospitals, primary healthcare and care for the disabled, and also culture, public transport within the region and regional development (Lidström and Madell, 2021). Municipal responsibilities include social services, primary and secondary education, childcare, and care for the elderly, and also provide fire protection and water and sewerage (SFS, 2017). Municipalities play a key role in spatial planning and shaping the physical environment (SFS, 2010).

Municipalities control local spatial planning. They are obliged to have up-to-date MCP documents that describe present and future land use within their borders. Moreover, the MCP provides the basis for negotiations between local, regional and national interests, and a politically anchored, strategic plan for implementing high-level policies and directives (SFS, 2010). Swedish research on climate adaptation in planning shows that physical planning, including MCP, is both a key sector and one of many sectors that need to collaborate in the municipal arena. The research also emphasizes that there is a gap within the planning sector and between the planning sector and other municipal administrations (institutional fragmentation) and that municipalities that have developed guidelines for climate adaptation experience difficulties in applying these in planning, e.g. to weigh input from experts against what is politically acceptable (Hjerpe et al., 2014). Regarding planning for renewable energy development and climate adaptation the municipalities' role differ depending on type of energy production; e.g. hydro power, solar energy or wind power. Wind-power development is singled out as one of the many land-use aspects and interests that could, and in most cases are and should, be integrated into MCP, whilst development of other types of energy production is not (Boverket, 2012).

Democracy is emphasized within the MCP process. Although the plan is not legally binding (but demanded by law), it should be politically anchored (SFS, 2010). Other authorities, concerned organizations, and citizens should be consulted before a MCP-document is adopted (Zachrisson et al., 2021). Hence, at least in theory, the MCP is a locally based, important tool for strategic decision-making regarding land use and the balancing of social and economic as well as ecological implications (Bjärstig and Thellbro, 2019).

Our motivation for using Sweden as a case study was the proposal for a new national strategy for sustainable wind-power development (Swedish Energy Agency, 2021). The proposed development in the six northern Swedish counties (covering more than half of the country's overall area; Fig. 1) is extensive in terms of effect, number of turbines and area covered (Table 1). Although in terms of relative numbers the proposals for northern Sweden are no higher than in other counties or municipalities, because of the geographically demanding as well as legally valued co-existing land-use interests; e.g. nature conservation and protection, national defence (SFS, 1998), reindeer husbandry (SFS, 1971) and forestry (SFS, 1979), the intrusion that will arise from extensive wind-power development will have major consequences for the municipalities concerned (Svensson et al. in prep). Thus, a deeper understanding of the planning capacity and readiness among these municipalities will shed light on their role as intermediaries and the choices they will have to make regarding wind-power development when implementing national strategies in these most critical of contexts (c.f. Svensson et al., 2020).

Important for local planning, a recently published bill is suggesting changes regarding municipal approval and veto of wind-power developments (Government Bill 2021:53). At present, a license for wind-power development can only be given if the municipality concerned approves it. However, there are currently no instructions regarding how and when during the process the municipality should give the approval, and its decision cannot be appealed as such (SFS, 1998). Consequently, for wind-

Table 1
Overview of the suggested wind-power development in Sweden (Swedish Energy Agency, 2021). The six northern counties are highlighted in grey.

County	Distribution effect (TWh)	Estimated number of 6 MW turbines	Total land area (km²)[a]	Surface claim of total land area (%)[b]
Stockholm	2	95	5 581	1.6
Uppsala	2.5	119	7 784	1.4
Södermanland	2	95	5 521	1.6
Östergötland	2.5	119	9 509	1.2
Jönköping	3	143	9 578	1.4
Kronoberg	2	95	7 723	1.2
Kalmar	3	143	10 149	1.3
Gotland	1	48	3 003	1.5
Blekinge	0.5	24	2 546	0.9
Skåne	2.5	119	10 060	1.1
Halland	2	95	4 870	1.8
Västra Götaland	7.5	357	21 488	1.6
Värmland	5	238	15 832	1.4
Örebro	2.5	119	7 753	1.5
Västmanland	2	95	4 795	1.9
Dalarna	7.5	357	25 181	1.3
Gävleborg	7.5	357	16 580	2.0
Västernorrland	7.5	357	19 856	1.7
Jämtland	7.5	357	43 647	0.8
Västerbotten	7.5	357	49 292	0.7
Norrbotten	10	476	87 005	0.5
NATIONAL total	87.5	4 165	367 753	28.4

[a] Total land area includes all land more than 100 m from lakes, watercourses and the sea.
[b] Surface claim and number of turbines are estimated values based on 6 MW turbines with a defined hypothetical yearly production.For further details on calculations, see Swedish Energy Agency, 2021.

power developers, the local planning process is unpredictable and potentially time- (Bergek, 2010) and cost-demanding (c.f. Diógenes et al., 2020). To mitigate these obstacles and facilitate faster wind-power development, the new bill intends to improve the licensing process. In brief, it suggests a new law containing regulations to the effect that municipalities will have to decide and report on whether or not an intended development will be allowed at a particular site within a specified time frame. The decision should be based on and motivated by the land-use considerations outlined in the MCP (Government Bill 2021:53). This proposed legislation, including the fact that the bill has the potential to challenge local self-government, justifies our focus on Sweden and its municipalities. It could affect the implementation of international and national strategies for wind-power development, and the outcome is relevant to other countries where local self-government is strong, for example other Nordic countries, Great Britain, Lithuania, the Netherlands, Germany and Switzerland (Bergström et al., 2021).

2.1. Study area

In total, the six counties in northern Sweden cover about 270,000 km², i.e. 66% of the total land area of Sweden, and include 69 municipalities, home to just over 14% of the total Swedish population of nearly 10.4 million. The population is denser in the east along the Gulf of Bothnia coastline, where most of the northern cities are located (Statistics Sweden, 2021). Geographically the municipalities are large, especially in the west, in proximity to the Norwegian border along the Scandinavian mountain range (Fig. 1).

Land-use claims are extensive within the municipalities. Large parts of northern Sweden, particularly in the mountains, are formally protected and/or identified as being of national interest, for a variety of reasons (Svensson et al., 2020; Zachrisson et al., 2021). The six northern counties represent 67% of all Swedish forestland, and intensive forestry is carried out on most of that land (20 million ha out of a total 28 million ha; Anon., 2021). Both forestry and agriculture are legislated as being of national importance (SFS, 1998). Agriculture is sparse but is a more common land use in the east because of the flatter and richer soils along the coast and in the river valleys. Of the 12 large river systems, eight are used for hydro-power production (Energiföretagen, 2021). The mining industry is expanding and, following property rights and the right of public access, recreational activities such as snow-mobile driving, fishing, hunting, hiking, skiing and berry and mushroom picking are carried out on all types of land for both private and commercial purposes (Svensson et al., 2020).

Most of the study area also includes the lands of the indigenous Sámi people. The roles and rights of the Sámi people and reindeer herding are integral components of municipal spatial planning (Bjärstig et al., 2020), because of the Sámi's cultural rights and rights to self-determination in traditional territories (stated in Government Bill 1976/1977, 1998/1999, 2009/2010; SFS, 2009). In recent years, increased wind-power development has increasingly added to the many different land-use claims (Svensson et al., in prep.).

3. Methodology

Case study research is a suitable method for understanding and describing the reality and forces at work in specific settings (Yin, 2018), and subsequently modelling and testing hypotheses for other settings (Flyvbjerg, 2011). We used a Swedish case study to examine whether municipalities, as local key actors, are prepared to implement the national strategy for wind-power development. Empirical data were gathered through an electronic survey (see Appendix A) sent to the 69 municipalities of northern Sweden (Fig. 2). Of the 69 municipalities, 48 (70%) responded. Using self-reported data does have its limitations (Gonyea, 2005), but as wind-power planning and decisions are handled by different municipality officials and politicians, it was deemed a suitable method for capturing the perceived wind-power reality in any given municipality.

Many municipalities in Sweden have experienced a lack of resources for strategic planning (Bjärstig et al., 2018). Between 2007 and 2010, 212 of the 290 municipalities received funding for wind-power planning, foremost linked to MCP (Boverket, 2012). Thus, current wind-power plans exist largely because of the opportunity to apply for national funding and they have rarely been updated. When screening the wind-power plans for the municipalities in our case study area, we learned that most of the plans are about ten years old. According to Bjärstig et al. (2018), it is also evident that many municipalities do not set aside much time for planning, and there is huge variation between municipalities regarding which office and position is responsi-

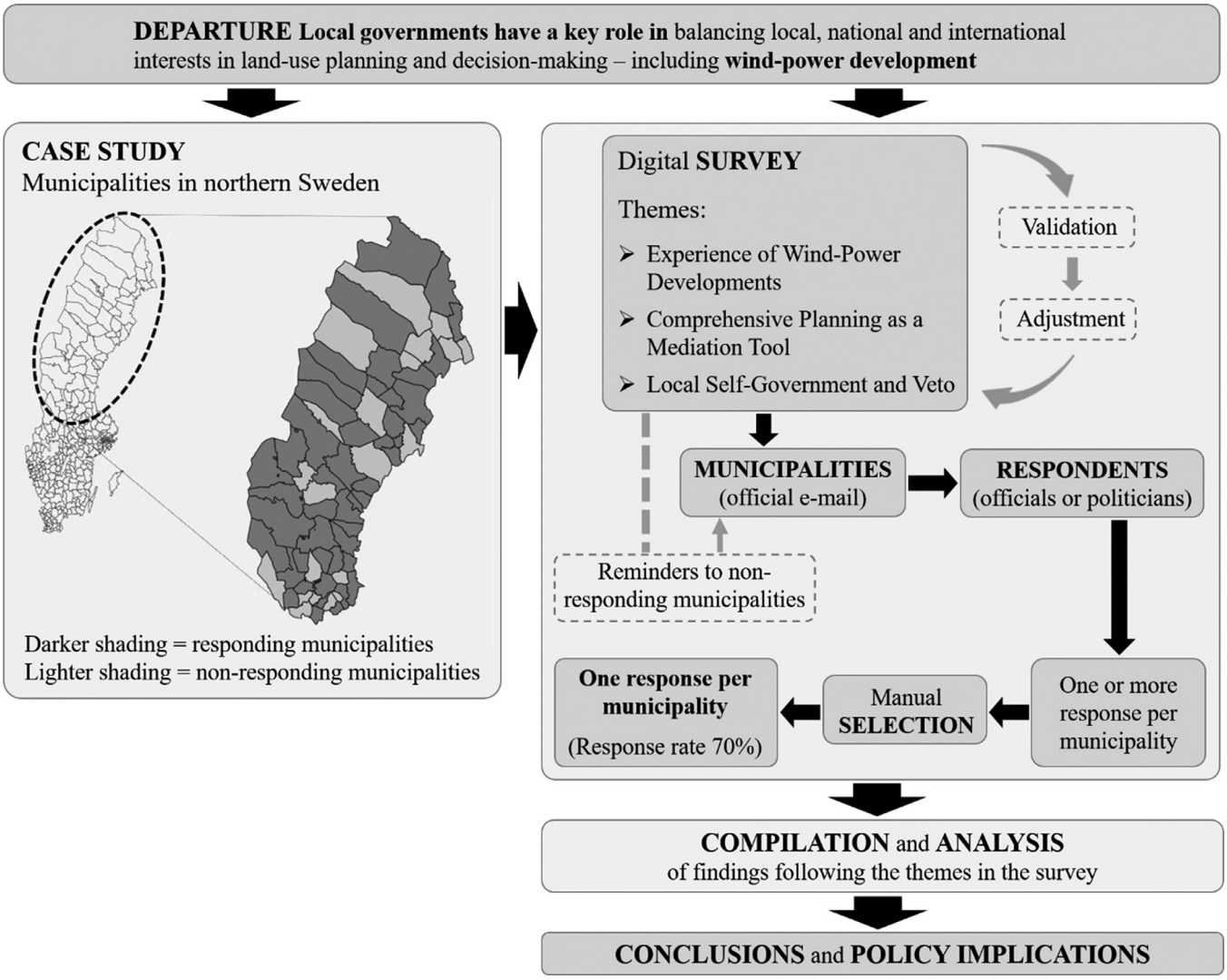

Fig. 2. The research design of the study illustrated in a flowchart.

ble for strategic planning. Local politicians are almost exclusively non-professional politicians who have to acquaint themselves with a range of matters, and hence do not have the opportunity, capacity or willingness to engage equally in different issues (Zachrisson et al., 2021). Municipalities were therefore allowed to choose who, politician or official, would answer the survey questions (c.f. Dillman et al., 2014).

The survey was designed to gain insight into whether the municipalities handle wind-power development within their spatial/strategic planning (MCP or some other type of strategic document) and the usability of that plan (i.e. a theme on background and experience and a theme on MCP as a mediating tool), but also how the municipalities intend to influence future wind-power development in their area and consequently in the country (i.e. a theme on local self-government and veto). Microsoft Forms was used to design the survey (in Swedish), which was then validated by research colleagues. The survey was initially tested on a politician in one of the target municipalities, resulting in some minor adjustments. The survey was then sent out (14-06-2021) along with a cover letter explaining the purpose of the survey and how to respond to it (see Appendix A for the cover letter and full survey; originals translated from Swedish into English by the authors). The survey was sent to the official municipality mailbox for all 69 northern municipalities, with the capacity to forward the survey on to the person or persons best suited to answering the questions (Dillman et al., 2014). A reminder was sent out eight days later (22-06-2021), and a second reminder after two months (16-08-2021). A final reminder was sent out a few weeks later (06-09-2021), to try and ensure a satisfactory geographical spread of responses (Fig. 2).

All respondents were anonymous and their answers outlined perceived problems and weaknesses as well as strengths regarding municipal planning and the readiness for future wind-power development. Based on this range of opinions, the responses were considered to represent a reliable dataset. Respondents could contact us for clarification and to ask questions, to diminish the risk of misunderstandings and misinterpretations, although none of them did. One municipality asked for the survey questions to be sent within an e-mail because they were restricted by policy to open links or attached files. We complied with the request, and their answers were recorded and analysed with the others.

In order to be able to present and analyse results from a municipal-level perspective, one representative answer was chosen from the 11 municipalities where more than one person responded to the survey. The representative answer was chosen based on an assessment of how experienced and confident the respondents seemed to be, using the frequency of 'do not know' answers combined with number of years in service and the number of wind-power developments handled. Responses were provided by 41 officials and seven politicians. All data analyses were carried out in Microsoft Excel 2016.

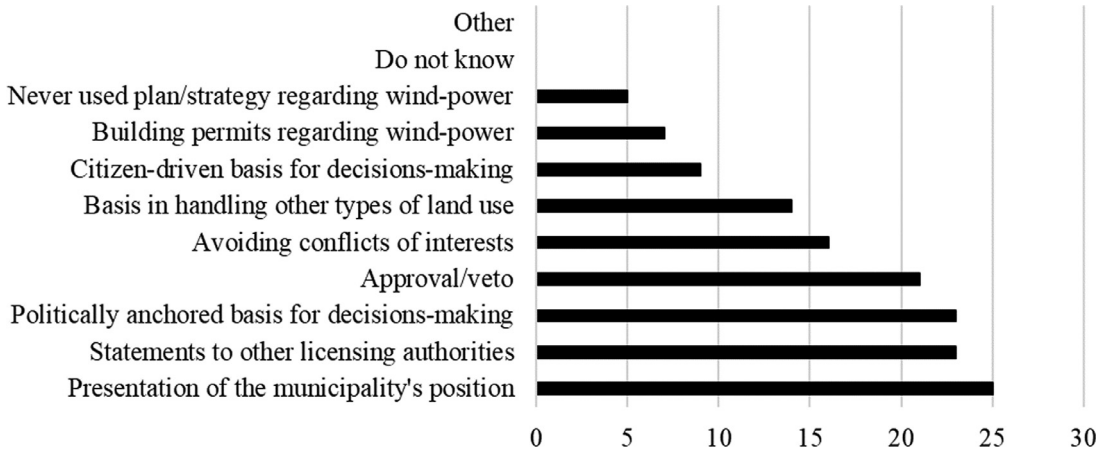

Fig. 3. When and how municipalities in northern Sweden with a wind-power plan (n = 40) were using their wind-power plan, August 2021. The x-axis shows the number of responding municipalities.

4. Results and discussion

4.1. Limited experience of wind-power developments

The majority of the respondents, 58%, had been engaged in municipal governance for more than ten years, 25% for one to five years, 15% for six to ten years and one respondent (2%) for less than a year. In total, 83% had handled four developments or less and 25% none; only 6% of the respondents had handled more than ten developments. The licensing process regarding wind-power development often lasts for many years (Söderholm et al., 2007), indicating that overall, the respondents, and hence presumably the municipality as a whole, had not handled many wind-power developments.

4.2. Comprehensive planning as a mediation tool

Most respondents (83%, i.e. 40 of the 48 responding municipalities) stated that their municipality had a plan for wind-power development. Of these, 60% emphasized the importance of the plan for representing the municipality's position regarding wind power (Fig. 3). These municipalities considered the plan to be important for issuing statements to other licensing authorities and providing a politically anchored basis for the decision-making process. More than half of the respondents whose municipality had a plan stated that the plan played an important role when approving or vetoing a proposed development. This indicated the vital importance of having an up-to-date and well-founded plan for wind-power development, preferably in or attached to the MCP, as the main tool for handling overall land-use planning (Bjärstig et al., 2018) as determined by law (SFS, 2010). This was especially true given the proposal in the Government Bill 2021:53 that municipalities will be obliged to make a decision for or against wind-power development at a given site, and that the decision should be based on the municipality's policies presented in the MCP document.

The geographical designation of suitable areas, and criteria for which public interests would be compatible with wind power, were aspects of the wind-power plan that were considered particularly useful (Fig. 4). Most respondents also considered guidelines regarding the consideration of other land-use interests and designating of unsuitable areas to be valuable content. Overall, these four aspects of the planning document were considered useful by 53–70% of the respondents representing municipalities with wind-power plans. This indicated the importance of having an up-to-date and well-researched MCP document when formally asked to state the municipality's position regarding wind-power development at a specific site.

Fewer respondents (20–40%) considered guidelines for discussions regarding planned and already built turbines, and guidelines on local benefits and disassembly, to be useful to the municipality. However, we did not know what was actually included in the plans: fewer positive responses may mean that relevant content was not included in the plan, or was included but not used. No comments or answers to other questions (e.g. about what content had caused difficulties or about the functionality of the plan so far and for the future) were given, suggesting that many respondents were dissatisfied with the municipality's plan and its scope. Nonetheless, the results indicated that general discussions about potential wind-power development, and perhaps even the desired benefits to the local society, should be set during the MCP process (c.f. Ejdemo and Söderholm, 2015). Guidelines for further discussions and negotiation regarding local benefits, such as work opportunities and type of compensation, should be beyond the scope of the MCP, as indicated by a comment from one of the respondents:

> *"I am positive about creating conditions for discussions regarding wind power, but I am very hesitant that this should be regulated in the MCP process."*

For municipalities with a wind-power plan, most respondents stated that the plan had worked fairly well or even very well (80%), and most respondents (63%) thought it would work in the future, albeit with some minor revisions (Fig. 5). A third (33%) stated that major revisions were needed for the plan to work as a strategic and mediation tool in the future. These results underlined the increased importance of an up-to-date and well-founded plan for wind-power development in the MCP. However, uncertainties regarding the function of the existing plans must be noted, as the results indicated only a few wind-power developments had been handled by respondents during the last ten years. So far there might not have been extensive pressure on the municipalities and their planning units, and hence the functionality of the plans has perhaps not been fully tested.

Of the responding municipalities, 63% of those that had a wind-power plan had not experienced problems related to it, while seven municipalities (18%) stated that they did not know. Five municipalities stated that they had concerns or problems related to the guidelines about the design of the turbines, which could mean the plans have not been able to keep up with the rapid technical development of wind-power farms (Martin et al., 2020).

Concern about other content within the wind-power plans varied between municipalities. Guidelines for suitable areas, consideration of areas that may be suitable, criteria for which public interests may not be compatible with wind power, and guidelines regarding potential conflict with other land-use interests, were variously stated to have posed problems. Whether there was one or several potential problems with the wind-power plan varied between municipalities. One-fifth of the munic-

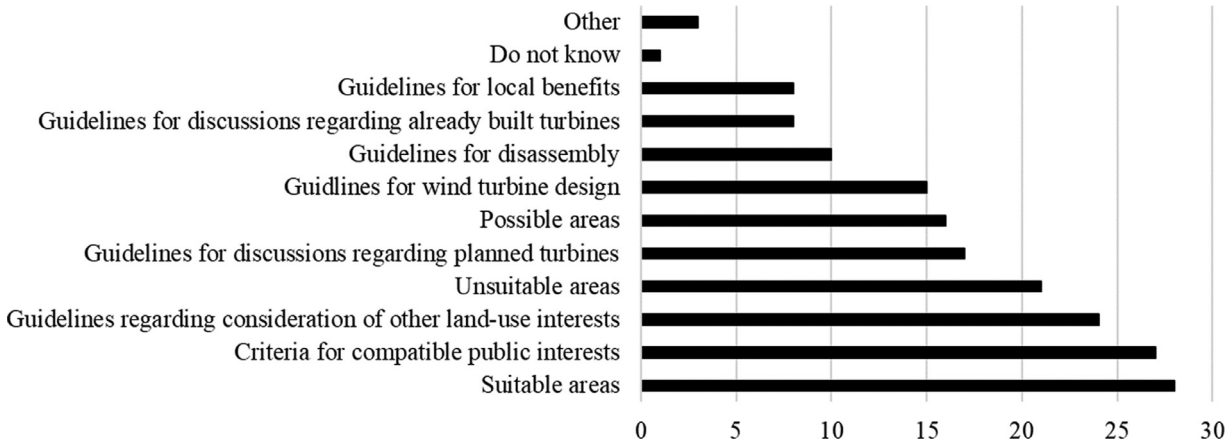

Fig. 4. The content of wind-power plans that were thought to be most useful by municipalities in northern Sweden with a wind-power plan (n = 40), August 2021. The x-axis shows the number of responding municipalities.

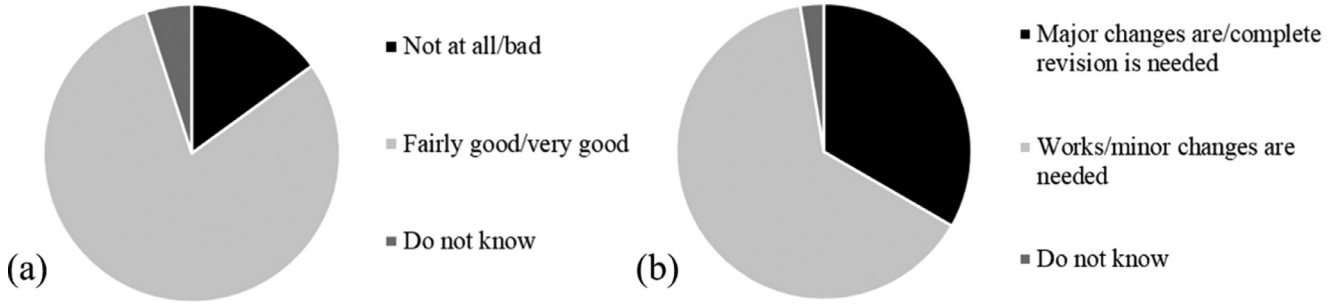

Fig. 5. (a) Current view of the wind-power plan, and (b) expected revisions for a future wind-power plan, in 40 northern Sweden municipalities with a wind-power plan, August 2021.

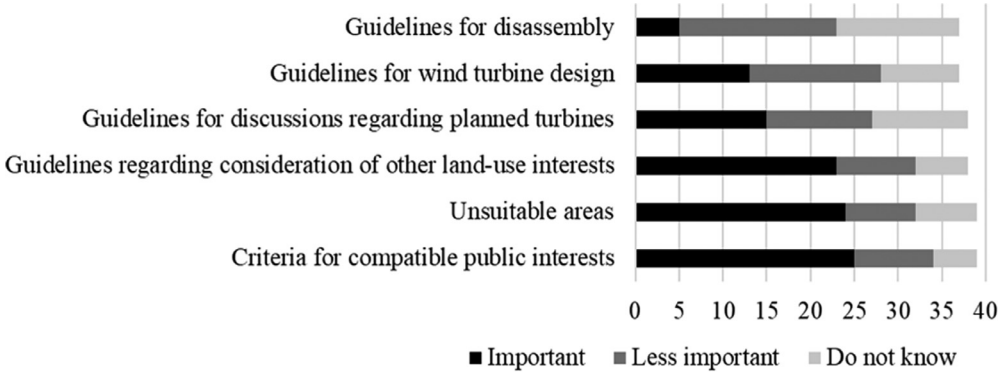

Fig. 6. Based on the policies and guidelines in the municipal wind-power plan, the relative importance of different considerations on the decision to approve or veto a wind-power development, in 40 northern Sweden municipalities with a wind-power plan, August 2021. The x-axis shows the number of responding municipalities.

ipalities (20%) with a wind-power plan had had difficulties with their plan, but it was difficult to draw firm conclusions regarding the stated difficulties.

4.3. Local self-government – veto as a crucial mechanism

For more than 60% of the municipalities with a wind-power plan (i.e. 40 of the 48 responding municipalities), decisions about approval/veto depended to a large degree on whether the wind-power developers took the municipal plan into account, specifically about suitable geographical areas for wind-power development, guidelines for consideration of other land-use interests, and criteria for how compatible the development was with other public interests in the area (Fig. 6). The results again indicated the importance of an up-to-date, well founded, and communicated MCP. Only about 10% of the respondents from municipalities with wind-power plans stated that guidelines for disassembling wind-power farms was important in the decision to approve or veto a wind-power development. Given the rapid growth of wind power during the last decade, it represents a relatively recent form of large-scale land use (e.g., Bilgili et al., 2011); the majority of municipalities have not yet experienced the disassembling of wind-power farms, and as a consequence do not know the relative importance of relevant guidelines. Based on the guidance within a plan, how well a development considers other stakeholders in the land, and the design of the turbines, does not seem to be decisive either. This was in accordance with the results on the usefulness of the plan content, even though a few of the municipalities considered the guidelines on turbine design to have posed difficulties.

Opinions from residents ('neighbours') and local businesses in proximity to the proposed development influenced municipal decisions to approve/veto in 50–60% of cases (Fig. 7). These opinions were concerned with the fair treatment of competing interests (Jenkins, 2016) and local acceptance (Darpö, 2020), which to a large extent, although not fully, could be handled and communicated through MCP (or similar participatory planning) process. The wind-power developer's inter-

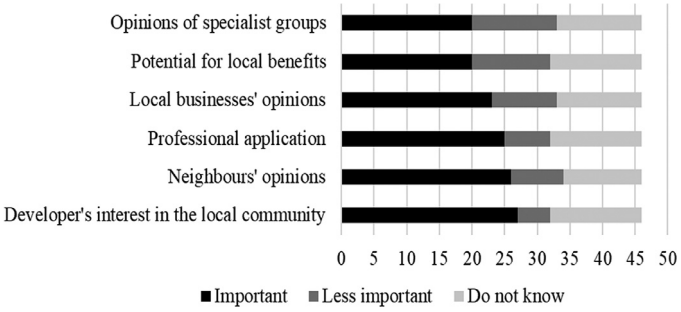

Fig. 7. The importance of other opinions to a municipality's decision to approve or veto a wind-power development, based on responses from 48 municipalities in northern Sweden, August 2021. The *x*-axis shows the number of responding municipalities.

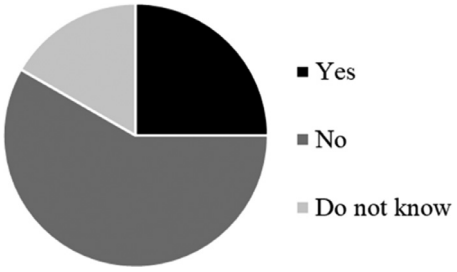

Fig. 8. The stated use of veto by responding municipalities from northern Sweden (n = 48), August 2021.

est in the local community, and whether the developer was perceived as professional, were considered important by more than half of the municipalities. The views of non-governmental organizations ('specialist groups') and the fact that wind-power developers can offer benefits to the local community are not without some importance. However, except from the views of specialist groups, it is more difficult for the municipalities to influence these types of aspects through a wind-power plan (c.f. Wolsink, 2000). Our results regarding the relative importance of local benefits are in accordance with Ejdemo and Söderholm (2015), who found that wind-power developments had a more positive impact on local development if there were mutual benefits such as an increase in local employment.

Respondents from 12 (25%) of the 48 municipalities stated that their municipality had vetoed wind-power developments (Fig. 8), whereas most (58%) stated that they had not used their right to veto and 17% did not know. Of the 12 municipalities that had used their right to veto a development, 11 had a wind-power plan.

More than 90% (11 municipalities) of those municipalities that had used their right to veto had only used it occasionally, implying that wind-power developments had mostly occurred in municipalities and areas with limited conflicts. This result could also be interpreted as wind-power developers selectively choosing positively inclined municipalities and suitable areas for establishments, and/or that the municipal wind-power plan had been comprehensive and well-founded (c.f. Abdel-Basset et al., 2021). However, the low number of developments that have taken place so far in the studied municipalities may also explain the low use of veto.

For nine of the 12 municipalities that had vetoed developments, the decision was presented with a motive. Among these municipalities, nearly half of the wind-power developers had not considered the content of the municipality's wind-power plan. Only two respondents stated that the veto was motivated by opposition from local residents, local business operators or interest groups (c.f. Wolsink, 2000). Again,

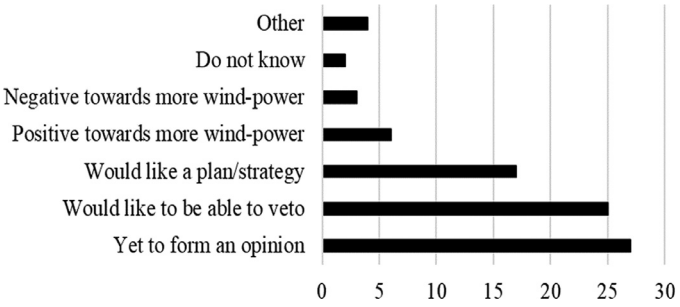

Fig. 9. The opinion of municipalities (n = 48) in northern Sweden regarding new international and national goals for wind-power development, August 2021. The *x*-axis shows the number of responding municipalities.

these results highlight the crucial role of an up-to-date and well-founded wind-power plan.

Importantly, we found that most municipalities (56%) had not taken the new national strategy into consideration, and more than half (52%) of the municipalities wanted to retain their right to veto a development (Fig. 9). Just over a third (36%) of the municipalities were planning to update their wind-power plan in preparation for an increase in proposed wind-power development. However, some respondents stated that municipalities could not plan for wind power because of limited resources, and because the plans were not used:

> *"MCP for wind power [development] is something to reflect on. Until the opposite is shown, my opinion is that we do not have the power to maintain such a plan so that it is updated and serves its purpose."*

> *"…the basic problem is that the [political] majority does not care about a MCP-document they themselves have approved."*

There was also an interesting response from a municipality that did not have a wind-power plan, indicating national prioritizing of national defence over wind-power in the municipality:

> *"It is almost impossible to establish wind power in the municipality due to the national interest of national defence"*

Even though it can be argued that national defence has a special status regarding prioritization between different land uses, it has been shown that there is weak legal guidance on how different land uses should be weighted relative to each other (Pettersson, 2008). There are therefore limited possibilities to prioritize locally among nationally identified land-use interests. This could inhibit potential wind-power development but, even more importantly, it could affect self-government with regard to municipal planning and local decision making concerning local land use.

Another response outlined how local self-government regarding land use can be curtailed by other licensing authorities because a municipality is not always provided with all the necessary preconditions when asked to present its position on a particular development (c.f. Darpö, 2020):

> *"The developments take place over the [municipal] board's heads and are handled by the County Administrative Boards. [I] Believe and suspect that the right of veto is important for all municipalities. /…/ there is an often forgotten dimension that is not clarified until it is too late and it is about power lines, distribution stations and transformers etc."*

These responses highlight the lack of power municipalities have in local governance regarding mediating between local land-use interests and local land-use development and 'overriding' national interests. The possible abandonment of the municipalities' right to veto has thus the potential to hinder local democracy and the perceived legitimacy of future wind-power developments from a local perspective.

5. Policy implementation and recommendations

Following the three themes covered in the survey and presented in the result section, it can be concluded that regarding the *experience of wind power development*, most municipalities in northern Sweden have managed few wind-power developments. This is remarkable considering the strong development of wind power in recent years, now supported by a national strategy with clear emphasis on siting in northern Sweden. Given that most of these northern municipalities also cover large geographical areas with favourable wind conditions, this suggests that they have not yet experienced many or major problems with wind-power development, as appears to be the case elsewhere around the globe (e.g., in Brazil, according to Gorayeb (2018), in India, according to Lakhanpal (2019), or as showed by Vallejos-Romero (2020), in Chile). In accordance with Saglie et al. (2020), it follows that so far, wind-power developments have taken place where the levels of opposition and conflicts of interest have been relatively low. To some degree, this explains why municipalities consider existing wind-power plans, largely incorporated into current MCP (c.f. Boverket, 2012), to be working satisfactorily as *mediating tool in wind-power development* and that they presumably will continue to do so. However, it raises the question regarding whether MCP has the capacity to support municipalities in future decisions about specific wind-power developments and whether municipalities have MCP in place that can guide future wind-power development in order to implement the new national strategy.

Crucial findings regarding the theme on *local self-government and veto*, is that most municipalities have rarely or never used their right to veto wind-power developments, and that almost 60% of the municipalities have not taken a position on the new national strategy regarding expanded wind-power development. Nevertheless, more than half of the northern Swedish municipalities currently rely on retaining their right to veto proposed wind-power developments, and only about a third mention wind-power plans as a tool for handling the proposed immense national development of wind power.

Since our study was conducted, the Government has decided on a Legal Council Referral based on the preceding bill (Government Bill 2021:53). Both the bill and the referral propose legislative changes concerning municipal approval for wind power. It is proposed that the municipalities' right to veto somewhat remains, but that it is brought forward and reshaped into a siting permit. According to the referral, such siting permit would be a precondition for wind-power development in the specific location, to be examined by the licensing authority in accordance with the Environmental Code. If this is realized, it will also be mandatory for the municipality to clarify the basis for its stated position. Further, the municipality will be obliged to announce and justify its decision within a restricted time. After a decision has been made, the municipality will no longer be able to change that decision for a certain period of time. If the referral is enforced, this will certainly put pressure on the municipalities to become more proactive in physical planning.

Our results indicate limited experience of wind-power developments. This, along with the fact that current wind-power plans date as far as about ten years back in time (due to lack of planning resources), and thus does not consider the rapid technical advancement in the wind-power sector, suggest that the municipalities in northern Sweden could in fact be in a state of 'calm before the storm'. There is great uncertainty about what the implementation of the national strategy and new legislation will mean in practice, and what implications it will have for the municipal self-government.

5.1. Policy recommendations

The Government assesses that the suggested legislative changes will promote more resource effective licensing processes for parties involved and that they will promote a dialogue between planners and municipalities on wind-power developments. However, based on our overall understanding that municipalities in northern Sweden are not ready to manage extensive wind-power development (in line with the new national strategy), replacing veto with a siting permit, as suggested by the Government, could affect the municipality's possibility to control land use within its borders and to decide how the landscape and the society should change and develop within their area. It is vital that the process of maintaining a strong municipal self-government and local democracy in the long term is assessed (c.f. Cowell, 2007). Hence, our *first policy recommendation* is that MCP should be given greater status within the wind-power development process as a mediating tool, since it, at least in theory, implies a strengthened local and regional anchoring of wind-power planning and hence of siting wind-power farms. However, this would require municipal resources and capacity beyond the current levels.

In previous studies it has been shown that Swedish municipalities are experiencing a resource shortage (financial as well as in competence) regarding strategic planning action (Bjärstig et al., 2018; Gustafsson et al., 2015), particularly in the low populated municipalities in north-western Sweden (Zachrisson et al., 2021). This was also supported by respondents in our survey. The Government Bill 2021:53 suggests that national support for further MCP is necessary, similar to the funding program administered by the National Board of Housing, Building and Planning during 2007–2012 (Boverket, 2012). Previous studies also reported that state funding programs in Sweden accelerated municipal planning efforts, but also that the planning process ceased when the programs were terminated (Gustafsson et al., 2015; Wretling et al., 2018), which could affect the long-term validity and usefulness of the plans. If MCP does not work effectively to support the municipalities' decision-making process regarding wind-power development, national development ambitions and the suggested changes to the municipal role within the licensing process will limit the power of local authority. In turn, this could risk the legitimacy of sustainable solutions for future wind-power developments as well as for local self-government. Based on this, and given the intention that the municipalities should keep their key role as intermediaries between the interests at different levels (international, national, regional, and local), our *second policy recommendation* is to secure resources and long-term planning capacity so that MCPs, in fact, can be up-to-date and well-founded bases for municipal decisions regarding suitable locations for wind-power development.

Local planning and decision-making by municipalities on development matters provides a platform for mediation between conflicting environmental, economic and political goals, which adds to the pressure of acting locally to solve global problems (c.f. Breukers and Wolsink, 2007). Regarding wind power, this mediation could affect development in either direction, for example negatively in relation to national strategies as well as global goals if the municipal policy is anti-wind-power development. Furthermore, wind-power developments, could be unrealizable and/or perceived as unfair or not legitimate if municipalities lack plans, foremost MCPs that are up-to-date and well-communicated among citizens as well as land-use interests and authorities on different societal levels, that local politicians can draw on (c.f. Natarajan, 2019). Our *third and final policy recommendation* for policymakers on national level is thus to further discuss how to leverage desired benefits to the local society when implementing the national strategy.

6. Conclusions

The core policy implication of our study, is that the municipalities as key actors with access to local experience and expertise need to be valued for the purpose to increase wind-energy production successfully. However, the municipal readiness for increased wind-power development is not satisfactory. It is vital to effectively support local MCP processes, in order to identify and secure suitable locations for wind-power development and to seek unity between levels of government. In other words, municipal generic capacity will have to be strengthened to support a route towards implementing the new national strategy on wind-

power development as well as meeting national and pan-national sustainability goals.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could appear to have influenced the work reported in this paper.

CRediT authorship contribution statement

Camilla Thellbro: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. **Therese Bjärstig:** Conceptualization, Project administration, Resources, Validation, Writing – review & editing. **Johan Svensson:** Funding acquisition, Project administration, Writing – review & editing. **Wiebke Neumann:** Writing – review & editing. **Anna Zachrisson:** Writing – review & editing.

Data Availability

The authors do not have permission to share data.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.cles.2022.100040.

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