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Effects of Lobbying Among Urban Planners in Finland – Views on Multi-Storey Wooden Building

BIOPRODUCTS BUSINESS

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Abstract

In the context of urban development and construction, professionals working as urban planners have a key role in influencing the implementation of national building codes at the local level, and can thus influence the use of material-based opportunities to promote sustainable development. With growing recognition of wood material as an alternative to concrete in multi-story construction, it is interesting to analyse planners' perceptions of alternative materials, as well as planners' perceptions of how they are themselves being influenced by diverse actors. Based on our survey data collected from the 30 largest Finnish municipalities, we analyse to what extent municipal planners experience lobbying and investigate whether this perceived lobbying effect is visible in the planners' perceptions of material-based sustainability in the case of multi-story building. According to our results, Finnish urban planners perceive, on the one hand, wood materials from the perspective of their solid environmental and other quality attributes in building, and, on the other hand, from a more generic technological and regulatory perspective, compared to building with concrete. Furthermore, we observed a significant lobbying effort aimed at professionals responsible for urban planning decisions in the largest Finnish municipalities, but further research is needed concerning the influencing mechanisms of this lobbying.

Keywords: sustainable construction, wood material, urban planning, professionals, lobbying

1. Introduction

Managing environmental impacts, along with creating social and economic benefits for the construction sector, is of fundamental importance when enhancing sustainable development (European Commission 2011). One option to decrease the adverse effects is to make a transition from non-renewable building material usage to renewable, as well as by developing material recovery and recycling processes in construction waste management (Takano et al. 2015). The environmental sustainability of the building sector can thus be enhanced by using less fossil-based materials, favoring materials with lower environmental impacts, or by taking advantage of the potential of renewable energy during various life cycle phases of construction (Ortiz et al. 2009). A growing recognition of wood material uptake is observed in multi-story construction as part of the rise of the green building concept (Darko et al. 2017), which also includes the use of hybrid structures such as combining wood and steel in structural solutions (Wang et al. 2014, Toppinen et al. 2019).

Häkkinen and Belloni (2011) note that, more than the lack of building technologies or assessment methods, sustainable building is hindered by organizational and procedural difficulties entailed by adopting new methods, or because of insufficient capabilities to manage social, cultural, and political challenges (Theaker & Cole 2001). In all, according to recent studies, future prospects for the rise of multi-story wooden buildings (MSWB) are determined by changing national building regulations (e.g., Toppinen et al. 2019, Hurmekoski et al.

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2018), strategic renewal within companies and related business networks (Toppinen et al. 2018), and urban planning procedures that either support or hinder MSWB market diffusion (Franzini et al. 2018).

Environmental benefits of increased wood use in construction are often seen as a positive aspect for enhancing MSWB (e.g., Hemström et al. 2011, Sathre & O´Connor 2010). Compared with other materials like concrete, steel, and bricks used as bearing structures for MSWB, wood either used as a structural material as such or in combination with other materials has been found to have many competitive advantages related to carbon storage, energy efficiency, and technological benefits (Dodoo et al. 2014, Santi et al. 2016, Liu et al. 2016, Asrubali et al. 2017, Chiniforush et al. 2018). Together with decreasing the environmental impacts of construction materials, the development of new services for the maintenance of buildings and decentralized renewable energy supply solutions are needed to enhance sustainable construction (Häkkinen & Belloni 2011).

For example, significant energy savings through high efficiency heat, ventilation, and air conditioning systems could be gained by using hygroscopic materials, such as wood, as building materials (Osanyintola & Simonson 2006). In addition, the choice regarding structural materials appears to have a stronger effect on environmental aspects and energy balances than do the interior materials used in buildings (Takano et al. 2015). However, the achievement of benefits, especially carbon storage and energy efficiency benefits, requires consideration of sustainable forest management practices, efficient usage of side-products originating from processing industries, and long life-cycles of wooden buildings (Gustavsson & Sathre 2011).

In parallel, increasing wood utilization in urban multi-story construction has been hindered by concerns connected to the technological properties of wood in construction affecting, e.g., fire and humidity resistance or the feeling of safety (e.g., Mahapatra & Gustavsson 2008, Gosselin et al. 2017). These concerns have somewhat decreased, however, since the adoption of fire-resistant technologies and the alleviation of regulations against MSWB construction (Riala & Ilola 2014). Another technical concern often emphasized is the lower sound insulation of wooden structures, together with general engineering aspects such as stability, durability, the vulnerability of wood to decay, or increased maintenance costs (Hemström et al. 2011, Roos et al. 2010).

Compared to the situation some years ago, there has been a considerable amount of research and development work done, which has added practical understanding of different engineering aspects of MSWB (Asrubali et al. 2017, Östman et al. 2017). Despite this, negative attitudes towards industrial wood construction still exist, e.g., among consumers (Gold & Rubik 2009, Lähtinen et al. 2019) and architects (Roos et al. 2010, Hemström et al. 2011, Conroy et al. 2018, Markström et al. 2018), particularly regarding the fire safety of wooden houses. Since most of the Finnish municipality planners have their educational background in architecture (Kangasoja et al. 2010), especially in the context of Finland, architects' views play a fundamental role when studying the MSWB market diffusion in reference to urban planning.

A key question when promoting more sustainable building initiatives in the urban environment is who makes the building material choices affecting the sustainability performance of construction? Along with companies, governmental bodies (Ortiz et al. 2009), local municipalities (Holm et al. 2011), and urban planners (Retzlaff 2009) have been found to have a focal role in improving the sustainability of the building sector and supporting uptake of using wood as a construction material for residential and commercial buildings (Quesada et al. 2018). At the governmental level, the diffusion of sustainable construction practices can be accelerated by norms and standards or through supporting actions such as subsidies for research and development (Beereboot & Beereboot 2007). In urban planning at the local municipality level, enhancing sustainable development is multi-faceted: it includes issues such as the reduction of energy use and emissions per capita, the minimization of wood production impacts on ecosystems, decreasing the consumption of environmentally harmful construction materials, or the circular use of renewable materials from local sources, all aiming at the provision of a healthy environment for citizens (Næss 2001).

From the perspective of studying the role of urban land management and promotion of sustainable development, Finland is an interesting research context. Under current regulation, urban planners have a governing role and possess significant power to promote political goals regarding sustainable construction: they can either set guidelines for certain material prerequisites, or municipal planning decisions may also directly affect the approval process of local building permits. In Finland, urban planners are civil servants and their duties are

governed by the Land Use and Building Act (1999). This means targeting the goals of sustainable development, and meeting the requirements for public participation processes in urban planning. While elected politicians in local governments approve the land use plans drafted by urban planners, the planners can themselves also directly influence the content of these (Puustinen 2004).

To compare with other countries, in Finland both municipalities and individual planners have a more fundamental role in designing national land use and planning system (Peltonen & Sairinen 2010). First, municipalities have "planning monopolies" in their territories and especially the biggest cities have considerable power in land use management, since they are important landowners. Second, in the Finnish land planning system, urban planners are in a key role to conduct both spatial design and implementation of all phases of planning processes within the boundaries of law. According to Säynäjoki et al. (2014), Finnish urban planners have "essentially unlimited mandate to devise sustainable solutions".

Furthermore, in the Finnish land use management system, urban planners do not only draft plans, but they also ensure that all important aspects of the planning decisions are considered. Due to this, planners commonly refer to external information sources or consult other experts. In formal procedures, the various impact assessments and surveys regarding building material selection are conducted at the early stages of urban planning and zoning projects (Peltonen & Sairinen 2010). A ruling by the Supreme Administrative Court (KHO 2015:56) in Finland is particularly interesting when viewed from the possibility of enhancing material selection criteria in urban planning processes by setting requirements for specific building materials (Franzini et al. 2018). In that historical decision, the court rejected the appeal of the Finnish Concrete Industry Association to outlaw the decision made by the City of Helsinki to zone one residential area for buildings made with wooden structures.

As a result of having a role of negotiation mediator among different stakeholders during the planning processes (Peltonen & Sairinen 2010), urban planners are typically involved also in informal networks with the private construction sector (e.g., Mäntysalo & Saglie 2010). In some cases, involved communication also includes lobbying attempts (McGuirk 2000), aiming to affect decision makers or officials (Milbrath 1963). For example, Fox-Rogers & Murphy (2014) observed the existence of informal strategies used by private developers to bypass the formal structures of the urban planning process in Ireland. These lobbying processes can also be systematic to the degree that they become institutionalized within urban decision-making processes. For example, consultation processes present in the Finnish urban planning involve a public hearing with a wide network of stakeholders (see e.g., Kuronen et al. 2010). While these processes can begin to resemble characteristics of professional lobbying, their effects have not been previously studied in the context of MSWB.

In spite of changes in building codes, business development in MSWB, possibilities for municipalities enhancing conditions for sustainable building through urban planning initiatives, and the governmental promotion of wood construction (e.g., Wood Building Programme in the Ministry of Environment in Finland), the market share of MSWB completed in Finland has not increased drastically (from 1% to 6% in 2010–18). In addition, despite the fact that lobbying appears to be common, very little research-based evidence exists showing to what extent lobbying occurs in the context of MSWB construction, or whether lobbying has had any effect on reaching the goals of lobbyists. To fill this void, our study examines these gaps in the context of MSWB in the case of Finland through two primary research questions: (1) How do urban planners perceive the role of wood as a sustainable construction material? (2) To what extent do urban planners face lobbying attempts, and are there linkages between lobbying attempts and views of urban planners on MSWB or their views on wood as a building material in the urban environment?

2. Conceptual Background

2.1 Stakeholder Influencing Strategies in the context of Urban Planning

Stakeholder theory (Freeman 1984) emphasizes the role of interrelationships between groups of people and individuals, who affect or are affected by each other in the social system. Urban planning as a social system comprises complex networked relationships of a myriad of people, and thorough decision impacts with economic, environmental, and social consequences. Stakeholder salience (i.e., "the degree to which managers give priority to competing stakeholder claims") is a key concept of the stakeholder theory, as introduced by Mitchell et al. (1997), and it recognizes that various groups of people

and individuals may have different levels of power and urgency as influencers within the systems.

The interesting question therefore is which of the stakeholders have the most influential power on urban planners, and why? From the building sector's viewpoint, urban planners certainly have power: their actions can directly influence the business opportunities of single companies and entire industries. As an example, priority given for particular construction materials affects (and is affected by) both individual firms and industrial associations promoting particular businesses, such as the ones building with concrete or wood. Planners' relationships with companies are also legitimate, as communication between municipality authorities and companies is part of a "legitimate" system comprising, e.g., informal strategy planning processes. If the role of planners is to produce legally binding documents that may impact firm performance, then according to the typology of Mitchell et al. (1997), the planners' claims can also be urgent. Hence, when planners' claims are urgent, the planners form a definitive stakeholder group for construction companies, and vice versa.

From the perspective of non-governmental organizations (NGOs), and more generally of citizens, urban planners can influence through planning processes, which affect living surroundings (Burby 2003). Compared to involvement with the business sector, urban planners also face social requests and regulations to integrate citizens and NGOs into planning processes, e.g., to promote public well-being and legitimize the decisions of local authorities (Häikiö 2012, Horelli 2017). Consequently, these stakeholder relationships are also legitimate, especially if they comprise clear definitions of responsibilities between authorities and citizens, and if these result in cooperative, deliberative, and transparent decision-making processes and accountable final decisions (van Buuren et al. 2014).

The early definitions of lobbying tend to draw from Milbrath's (1963) view concerning lobbying as an action conducted by an interest group representative to initiate discussion and information transfer, while according to Berg (2009), lobbying can be considered a form of advocacy. Differences between lobbying, representation, and consultation are presented in Table 1, which shows stakeholder communication to be essentially related to delivering and receiving information. More importantly, lobbying and representation are viewed as forms of communicating vested interests, and also consultation processes can at some point begin to resemble a lobbying process.

In the context of urban construction projects, communication between project management and the public, and the maintenance of good stakeholder relationships are critical success factors (Olander & Landin 2005, Yang et al. 2009). The power of a given stakeholder group is suggested to contribute most to stakeholder salience (Parent & Deephouse 2007), although urgency and proximity are also important in construction project decision-making when dealing with stakeholder claims (Yang et al. 2014).

Table 1. Differences between lobbying, representation, and consultation (adopted from Hillier, 2000).

	Lobbying	Representation	Consultation
Direction of communication	Primarily one-way, from interest groups to the government	Primarily one-way, from interest groups, associations, elected politicians, and experts to the government	Primarily two-way, from the government to groups or clients, and from these groups and clients to the government
Objective	To change legislation or policy to suit the interests being represented	To convey views, information, perspectives, and interests of a broader community into the policy process	To improve service along with support for services and policies through communication with clients and stakeholders
Government	Viewed primarily as key decision makers, politicians, and senior officials	Viewed primarily as the political executive	Viewed primarily as the department or agency delivering services
Non-government	Viewed primarily as interest groups and associations representing relatively narrow or specific interests	Viewed primarily as citizens with fairly general interests and values that need to be reflected in the policy process	Viewed primarily as clients and stakeholders with respect to a specific policy program
Examples	Industry association meetings with ministers, resident action groups petition to elected representatives, senior officials telephone ministers	Elections, polling, task forces, and royal commissions	Roundtables, extended workshops that involve discussion and analysis of policy issues, and program design and delivery

In addition, earlier research indicates that lobbying towards change is more difficult than lobbying to maintain status quo (Mahoney 2007, Hojnacki & Kimball 1999). It appears evident that those who wield highest economic power have the means to bypass formal planning processes. For example, a Norwegian study found that those with the highest power to reject or approve zoning plans were lobbied, firstly, during non-transparent communication between the lobbyists and decision makers; secondly, during the formal public hearing processes; and finally, during the actual political decision-making stage (Falleth et al. 2010 cf. Wøhni 2007). In their case analysis, Mäntysalo & Saglie (2010) explored the private sector's influence on planning activities in Finland and Norway. Their results suggest that informal communication between private sector actors and governmental authorities indeed occurs, and this may cause unethical situations in procedural stages of planning.

2.2 Influencing Urban Planners as Decision Makers

Urban planners are a broad group of professionals in charge of coordinating land use planning in cities and other administrative entities, with the power to influence planning processes as information gatekeepers, communicators, preparers, and introducers of the plans (Puustinen 2004). As information gatekeepers, planners receive information during planning processes, and they may have the power to decide whom to pass or not pass this information to. In preparing and introducing plans, they can also affect the outcomes of the processes *via* dialogue with political decision makers. During the plan formulation phase, the knowledge base and capability of the planner to communicate the importance of various aspects of the plan to non-professional decision makers reflects on their possibilities to make well-grounded decisions and to avoid conflicts among various stakeholder groups (e.g., Peltonen & Sairinen 2010).

Local authorities, including urban planners, are considered powerful bodies for implementing sustainable building policies: in addition to controlling land use decisions and building permits, they can also collectively act as a lobbying voice for enhancing multiple sustainability issues (Retzlaff 2009). According to Rydin et al. (2007), embedding the knowledge of planners on sustainable construction requires more in-depth dialogue between various actors in the construction processes, e.g., by enhancing common understanding and learning, by shaping knowledge into formal plans, and in the development and maintenance of actor networks. Compared with governmental bodies, local authorities thus have a more practical role in enhancing sustainable construction by promoting small-scale experiments, learning from best practices, and supporting mutual learning via networks within municipalities (Holm et al. 2011).

Both formal (e.g., public participation) and informal processes (e.g., municipal strategic planning) have become important in the urban planning processes (Sehested 2009, Puustinen et al. 2017). For example, Finnish urban planners value ecological aspects in the context of sustainable construction, but evidence also shows that challenges have occurred in implementing impact assessments (Peltonen & Sairinen 2010) and integrating ecological information into planning processes (Yli-Pelkonen & Niemelä 2006) in particular. Information for planning processes is also provided by consultants and informal personal contacts. A reason for this may be that planners are lacking personal expertise in measuring ecological sustainability. From the perspective of MSWB, there is a risk that the knowledge on industrial wood construction among urban planners is weak, at least in Finland. For example, according to a recent qualitative study (Franzini et al. 2018), about half of the interviewed urban planners admitted to personally having deficiencies in their knowledge on MSWB topics.

Although environmental aspects are commonly emphasized in urban planning and in promoting sustainability transformation, social constructs, such as access to core services, social interaction and participation in groups and networks, and community stability (along with a sense of human safety and security) are also not minor issues (Dempsey et al. 2009). Because of this, professional urban planners can, in their decision-making schemes, be in constant conflict between various sustainability-related goals: economic growth and efficiency, environmental protection, or equality of people (i.e., social justice, economic opportunities, and income parity) (Campbell 1996). Regarding the usability of environmental information, Rydin et al. (2007) discovered that planners in London, Great Britain considered information to be too scattered, technical, and general in nature to be useful in urban planning processes. In addition, deficiencies in communication between planners and external experts in Sweden (Eliasson 1999), and planners and researchers in Finland (Säynäjoki et al. 2014), hindered the integration of various types of knowledge into urban planning processes.

2.3 Scope of Factors Influencing Planners' Perceptions on Wood as a Building Material

Politically devised instruments and regulatory factors, along with relationships within stakeholder networks within the construction industry are suggested to affect the diffusion of innovations (e.g., Blayse and Manley 2004). In the case of MSWB companies, cooperation among stakeholders has been emphasized as an important factor for strengthening innovation capabilities (Hansen 2010), while governmental policy instruments provide a more generic platform as a source of innovations (Tykkä et al. 2010).

The need for industrial renewal in the construction sector, through changes in attitudes and novel ways of working, was requested as early as the 1960s (Carter 1967). The development of industrial processes and off-site manufacturing methodologies has been a fundamental issue regarding sector renewal (e.g., Wafaa & Goulding 2011). Yet, market diffusion of these new types of building processes is slow, especially if urban planners and customers have insufficient knowledge of the benefits (e.g., impacts on building quality) compared to traditional building technologies based on the high rate of on-site production (Leabue & Viñals 2003, Warszawski 1999).

In the scope of industrial construction, MSWB can be considered an environmentally oriented innovation, affecting not only ecological sustainability issues, but economic and social aspects as well. According to Brege et al. (2014) and Riala & Ilola (2014), the lightness of wood as a building material provides a key competitive advantage compared to concrete building, in addition to its easier transportation and advanced prefabrication possibilities. From the end-users' viewpoint, timber buildings are also considered pleasant living environments with better indoor air quality (Gold & Rubik 2009).

3. Data and Methodology

To answer our two research questions outlined in the Introduction, the data of our study were gathered during spring 2014 and analyzed in conjunction with two university master's degree projects in 2014 and 2017, with specific targets concerning MSWB solutions. A Finnish definition for residential MSWB considers it to be in use year-round and to have at least three apartments, at least two of which are placed on top of each other. The building's supporting frame and surface materials are mostly made of wood in accordance with effective building regulations.

The data are based on an online questionnaire sent by e-mail to 728 recipients, who at the time were civil servants working on urban planning decisions. The themes of the questionnaire were defined by employing scientific and professional literature combined with other materials (e.g., newspaper articles) connected to MSWB, sustainable building, and urban planning, especially in Finland, but also in other countries. After that, a professional urban planner working with, e.g., MSWB issues in the Helsinki metropolitan area was interviewed to receive empirical feedback for the topics of the study and to design the final questionnaire. Finally, prior to actual data gathering, the functionality of the data gathering procedure (i.e., contents of the cover letter and online link to the questionnaire sent by e-mail) was pretested among researchers, who had not been participating in the actual questionnaire creation.

Since there is no comprehensive directory of urban planners in Finland (i.e., no information on the whole population), we had to choose the public officials potentially working in municipality planning one by one for the study by using the official municipality Internet pages as a main source for contact information. In addition, since there are various professional titles for municipality planners in Finland, in the cover letter respondents were instructed to respond only if their work was related to urban planning. Otherwise, they were asked to forward the questionnaire to a colleague in their municipality filling this criterion. Compared to a postal survey, utilizing electronic data gathering enabled respondents to easily forward the cover letter and questionnaire to colleagues, when necessary (herewith referred as forwarding procedure). In addition, since the initial data gathering was implemented as a part of master's degree projects, electronic data collection enabled notable cost savings compared to other alternatives.

Our data gathering approach had impacts on both the possibilities to assess the reliability and to ensure the validity of the results. The risk of social desirability bias (e.g., Nederhof 1985) was decreased by employing an online questionnaire and ensuring the anonymity of respondents already at the data gathering phase. In the context of urban planning, lobbying may be considered to be socially undesirable and is probably a highly sensitive topic for public authorities to discuss even at general level. Regarding reliability and validity assess-

ments, due to the forwarding procedure in the online data gathering, information on the identity of the actual respondent was lost. As a result, it was not possible to assess the impacts of non-response bias (e.g., Sjöström et al. 1999) on the reliability (e.g., testing whether similar results would be gained by repeating the research) or validity (e.g., congruence between the responses between respondents and non-respondents) of the results. However, simultaneously with the challenges in evaluating the reliability and validity, the forwarding procedure enabled managing the risks related to the acquirement of "incorrect answers" (e.g., respondents misunderstanding the questions due to their lack of knowledge).

According to Sjöström et al. (1999), incorrect-answer bias is abreast with non-response bias, another major factor that may distort questionnaire survey results. Thus, the forwarding procedure had both strengths and weaknesses in relation to the quality of our research work: while making analysis non-response bias was not possible due to lack of information on the actual receivers, it simultaneously enabled decreasing social desirability bias (i.e., the respondents were anonymous already at the data gathering phase) and incorrect-answer bias (i.e., respondents without knowledge or experience on the topic were encouraged to leave themselves out from the study sample).

The municipalities chosen for the study were the 30 largest Finnish municipalities by population, accompanied by the city of Heinola, which is slightly smaller but has been one of the pioneering cities in the field of MSWB. There were three reasons for focusing on the biggest municipalities: First, the largest municipalities in Finland play a key role in meeting the challenges of ecologically sustainable urbanization (Yli-Pelkonen & Niemelä 2005) through, e.g., the enhancement of sustainable building initiatives (Franzini et al. 2018). Second, as significant landowners, bigger cities have considerable power in making land use decisions (Peltonen & Sairinen 2010). Third, compared to smaller communities, the largest municipalities are assumed to have more central guidance and coordination for meeting the increasing requirements, e.g., in stakeholder communication for building trust between public administration and citizens (Bäcklund & Mäntysalo 2010), which is also closely connected to recognition of lobbying attempts. Fourth, compared to larger cities in Finland, acquiring e-mail contact information of people working with urban planning issues was more challenging in the case of smaller municipalities, combined with the fact that the division of work in planning issues seemed to be less structured in terms of ensuring efficient data gathering.

After two rounds of e-mail reminders, 102 responses were received (response rate 14%) from 26 different municipalities. By population, the 26 municipalities represented in the data contain approximately 54% of the population of Finland (Statistics Finland 2016). Thus, despite a fairly low response rate, our results provide entirely new insights on the little studied phenomena of lobbying and MSWB market diffusion in Finland, especially in larger municipalities. By education, the majority (81%) of the respondents were architects, while the rest had various types of education otherwise related to urban planning (e.g., landscape architects, engineers in building technique or geodetics).

Compared to Kangasoja et al. (2010), the educational background of the respondents was in accordance with the Finnish urban planners' professional education in general. According to the current occupational titles, targeting the questionnaire to the municipality employees working with urban planning succeeded well, since all of the respondents were working with issues directly connected to urban planning (e.g., heads of zoning department, zoning architects, municipality architects). Thus, from the perspective of validity of the results, there are solid grounds to assume that data are composed of responses of knowledgeable professionals, who were capable of providing insights on the actual situation in the Finnish urban planning system.

All analyses of the study were conducted with IBM SPSS Statistics software. In addition to descriptive statistics, we used exploratory factor analysis by following "the eigenvalues greater than one" rule with Kaiser normalization, Maximum Likelihood Estimation, and Varimax rotation. Factor analysis is a statistical method that allows reducing a set of items into a more operable number of categories or latent "factors," which essentially include the same information as the original data (Harman 1976, Kim & Mueller 1978). In our study, exploratory factor analysis enabled reducing the number of items describing respondent views on wood materials especially in the context of MSWB. Initially, in this study the factor analysis was implemented by utilizing 11 questions with items describing ecological, economic, technological, and social sustainability aspects of MSWB. The sample's suitability for factor analysis was

confirmed with the Kaiser-Meyer-Olkin (KMO) measure for sampling adequacy (0.792). Bartlett's test is clearly statistically significant ($p \geq 0.05$), and thereby confirms the data to be appropriate for factor analysis

According to Conway & Huffcutt (2003), the factor analysis results reporting should include the extraction model, number of factors, factor interpretation and computation, eigenvalues, communalities, degree of variance explained, and a factor loading matrix. Prior to accepting the two-factor solution as the most interpretable and robust for further analysis, several rounds of test analyses with different numbers of items were executed. Of the three items excluded from the final two-factor solution, one had a communality loading lower than 0.2, one had issues for loading on multiple factors, and the last one caused remarkable problems during interpretation of the analysis, and was removed after careful consideration. By figures, the two-factorial result explained 46.4% of the total variance in the results. This can be deemed sufficient for our analytical purposes.

In addition, the two extracted factors were tested against background variables with one-way analysis of variance (ANOVA), which allows the comparison of two or more means and provides information concerning potential statistically significant differences among means (Tabachnick & Fidell 2013). After factor solution finalization, ANOVA was conducted to determine whether or not the lobbying status of the respondents affected their views on MSWB. For the post hoc multiple comparison in ANOVA, Fisher's Least Significant Difference (LSD) test method was applied. Compared to other post hoc comparison methods (e.g., Tukey's test), LSD is a more powerful method, e.g., to avoid finding differences between groups when differences do not actually exist (Williams & Abdi 2010).

In the analysis, lobbying status was assessed with two questions: "*Does construction industry operating in your municipality or in the neighboring municipalities affect urban planning decisions in your municipality?*" and "*Do industrial interest groups try to affect urban planning decisions in your municipality?*" Being targeted by lobbying attempts was defined by different combinations of "Yes," "No" and "I do not know" as illustrated in Table 2. In the ANOVA analysis, lobbying status was employed as an independent variable and the generated factors as dependent variables.

As the extracted factors describe respondent views, the results provide information concerning the perceived effect of lobbying on respondents' views. The analysis was made for the entire population and for the planners with at least 10 years of working experience. Regarding the working experience, tests were implemented both according to the respondents' general working experience in the field of urban planning and more specifically in their current professional position. In the ANOVA results, a cut-off point $p \leq 0.100$ was utilized to report the statistical significance of the results. From the perspective of interpretation of the results, it means that statistically observed differences between respondents belonging to three lobbying categories were supported by the empirical data at least at 90% probability level, instead of being caused by chance (Carver 1978).

4. Results

4.1 Urban Planners' Perceptions of Wood Material as a Construction Material

Figures 1–8 illustrate the agreement (i.e., respondents who agreed completely or fairly much), disagreement (i.e., respondents who disagreed completely or fairly much), and uncertainty levels (i.e., respondents who neither agreed nor disagreed, or who were unsure of their opinion) concerning different statements related to the sustainability of MSWB among the respondents. In all, respondents were most like-minded (appr. 90% were of a similar opinion) about two statements: the possibility of implementing MSWB while simultaneously utilizing domestic wood and fulfilling sustainable

Table 2. Lobbying status of the respondents by three categories.

"Do industrial interest groups try to affect urban planning decisions in your municipality?"	***Does construction industry operating in your municipality or in the neighboring municipalities affect urban planning decisions in your municipality?***		
	Yes	**No**	**I don't know**
Yes	Lobbied	Lobbied	Lobbied
No	Lobbied	Not lobbied	Not lobbied
I don't know	Lobbied	Not lobbied	Does not know if lobbied

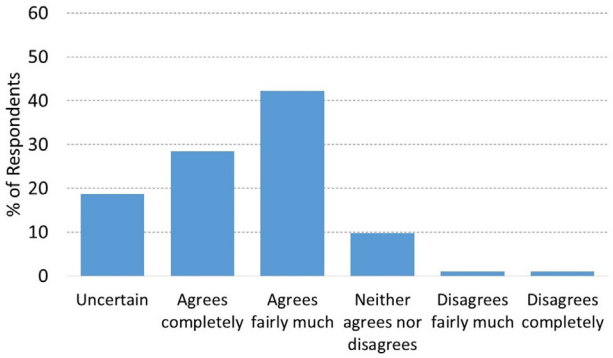

Figure 1. "MSWB helps realizing the 20-20-20 targets set by the EU in our country".

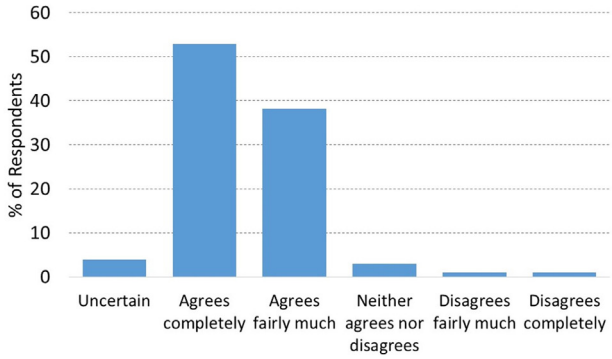

Figure 2. "MSWB is possible by utilizing domestic wood while still realizing sustainable development in our country".

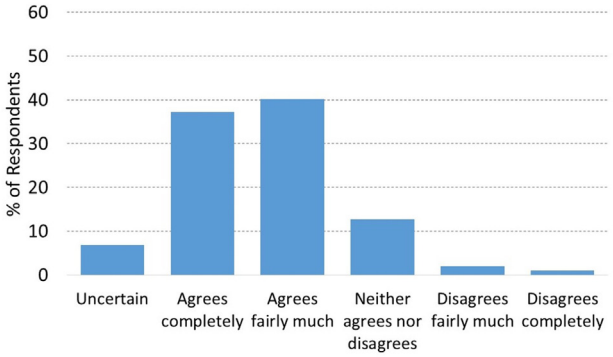

Figure 3. "MSWB eases decreasing the share of energy consumption of buildings and construction of total energy consumption in our country".

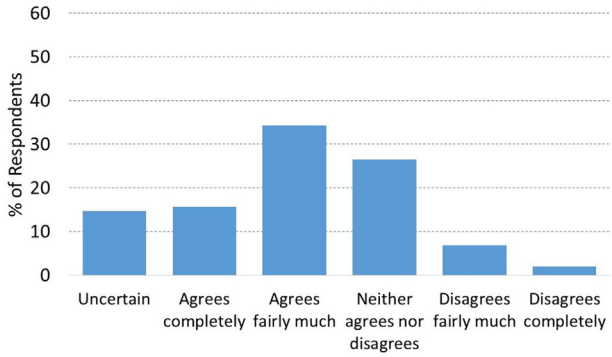

Figure 4. "MSWB is a cost-effective alternative compared to using other construction materials in our country".

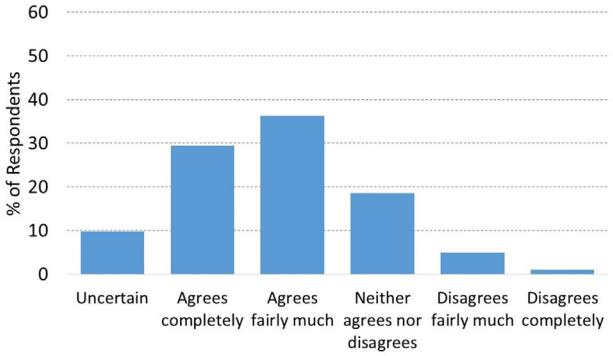

Figure 5. "MSWB is developed to a high enough standard to guarantee similar quality as alternative building techniques in our country".

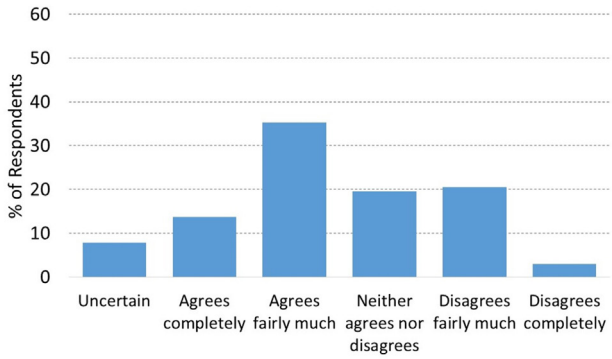

Figure 6. "MSWB is from the perspective of construction techniques in a similar position with concrete building in urban planning in our country".

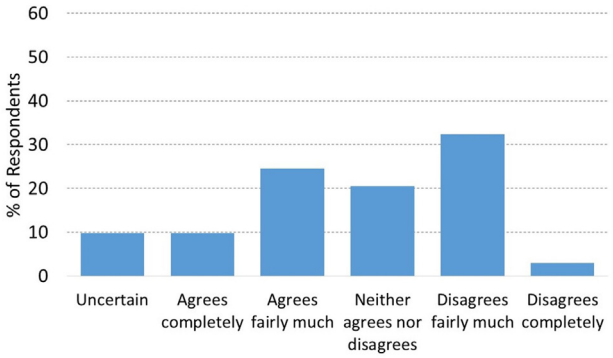

Figure 7. "MSWB is from the perspective of national legislation in a similar position as concrete building in urban planning in our country".

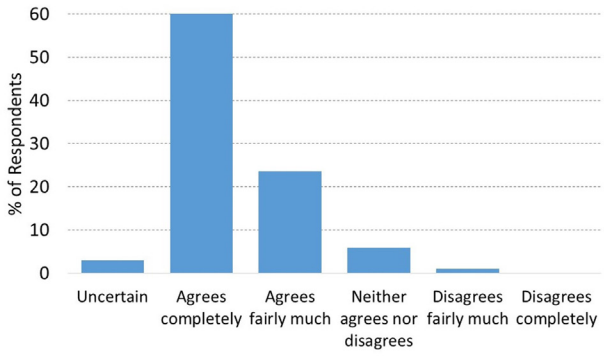

Figure 8. "MSWB has beneficial ecological qualities (e.g. carbon storage), and I therefore wish it to become common in our country".

development (Figure 2) and the existence of strong carbon benefits from MSWB (Figure 8). The majority of respondents also agreed on the potential of MSWB to help realize the EU's renewable energy 20-20-20 targets (71%), to conserve energy (77%), and to be developed well enough to guarantee similar construction quality as other alternatives (66%) (Figures 1, 3, and 5). Yet, related to these three themes, a fairly large proportion of urban planners remained uncertain (20–28% of the respondents) of their opinions concerning the question.

From a regulatory perspective, respondents disagreed quite strongly on the claim that MSWB would be in the same position in national legislation compared to concrete construction (Figure 7). Thirty-four percent agreed, 35% disagreed, and slightly over 30% were unsure of their views. Views regarding MSWB in urban planning from the perspective of the construction techniques in reference to concrete were also fairly scattered (i.e., 49% agreed, 24% disagreed, and 27% were uncertain) (Figure 6). Finally, respondents were most uncertain (41%) about the cost-efficiency of MSWB compared to other construction materials (Figure 4).

The factor solution reduced the operable amount of original items in the data from eight to two latent factors, which also gave an acceptable ratio of Cronbach alphas of over 0.7 (Table 3). The two calculated factors were named as Factor 1: "MSWB is characterized with solid sustainability benefits and quality properties" and Factor 2: "MSWB is competitive against concrete construction". In the second stage we utilized these two extracted factors as to analyze the perceived effect of stakeholders' lobbying efforts on these respondents.

4.2 Degree of Lobbying and Effect on Respondents' Views on Wood as a Sustainable Building Material

We used the following questions from the questionnaire to determine the lobbying status of the respondents: "Does the construction industry operating in your own or in a nearby municipality influence the planning decisions made in your municipality?" and "Do industrial interest organizations attempt to influence planning decisions in your municipality?" As shown in Table 4, 42% of respondents stated that they had been experiencing one or both types of lobbying in their work, and the share was nearly the same for respondents who were claiming they had not faced lobbying. Interestingly, 17% of respondents were unaware of whether they were being lobbied or not. The length of work experience in the current position or experience in working for urban planning did not substantially change the perceptions of the planners of having been a target of lobbying.

Table 3. Results from the final rotated two-factor solution.

	Communalities (Extraction)	Factor loadings	
		1	2
"MSWB helps realizing the 20-20-20 targets set by the EU in our country"	0.477	0.677	
"MSWB is possible by utilizing domestic wood while still realizing sustainable development in country"	0.479	0.688	
"MSWB eases decreasing the share of energy consumption of buildings and construction of total energy consumption in our country"	0.457	0.652	
"MSWB is a cost-effective alternative compared to using other construction materials in our country"	0.440	0.555	
"MSWB is developed to a high enough standard to guarantee similar quality as alternative building techniques in our country"	0.336	0.437	
"MSWB is from the perspective of construction techniques in a similar position with concrete building in urban planning in our country"	0.752		0.845
"MSWB is from the perspective of national legislation in a similar position as concrete building in urban planning in our country"	0.400		0.630
"MSWB has beneficial ecological qualities (e.g. carbon storage), and I therefore wish it to become common in our country"	0.369	0.547	
Cronbach's Alpha		0.774	0.706
Eigenvalues		2.700	1.010
Explained variance, %		27.45	18.94

Factor 1: "MSWB is characterized with solid sustainability benefits and quality properties"
Factor 2: "MSWB is competitive against concrete construction"

While close to one-fifth of the respondents (17%) were uncertain whether industries or industrial interest organizations had affected planning decisions in their municipalities, in the case of NGOs and citizens (e.g., resident associations and nature conservation organizations) such uncertainty did not exist. Instead, all of them had explicit opinions on the issue: 96% of the respondents stated that these stakeholders influence urban planning, while only 4% responded that they do not. As the respondents were like-minded concerning the influence of NGOs and other citizens on urban planning processes, the role of individual firms and industrial organizations is of special interest to our study.

ANOVA results for the entire population of respondents show statistical evidence that the groups of lobbied and non-lobbied respondents differ from each other for Factor 2 (i.e., their perceptions on the potential of MSWB to compete with concrete construction) (Table 5). Similar evidence for Factor 1 (i.e., sustainability benefits and quality properties of MSWB) was not found.

Compared with the entire population of respondents, the results regarding Factor 2 become clearer when acknowledging longer work experience in urban planning (Table 6). For respondents that had worked in the field of urban planning for at least 10 years, we received statistical evidence that in Factor 2 there are differences both between groups of lobbied and non-lobbied respondents and between non-lobbied respondents and those unaware of lobbying. Regarding Factor 1, indications on statistically significant effects of lobbying were found.

As some respondents may have long work experience in managing particular urban planning tasks, lobbying impacts were also analyzed for the group of respondents that had worked in their current positions for 10 years or more (Table 7). According to the results, among this group of respondents at the minimum 90% probability

Table 4. Lobbying status of respondents.

	Entire sample		≥10 years in			
			Urban planning		Current position	
	Frequency	%	Frequency	%	Frequency	%
Yes	43	42.2	34	48.6	19	45.2
No	42	41.2	27	38.6	19	45.2
Does not know	17	16.7	9	12.9	4	9.5
Total	102	100.0	70	100.0	42	100.0

Table 5. Multiple Comparisons ANOVA for the full sample of respondents.

Dependent variable	(I) Group	(J) Group	Mean difference (I-J)	Std. error	*p*-value
Factor 2 *"MSWB is competitive against concrete construction"*	Lobbied	Not lobbied	-0.319	0.192	0.100

Table 6. Multiple Comparisons ANOVA for respondent groups that have worked in urban planning ≥10 years.

Dependent variable	(I) Group	(J) Group	Mean difference (I-J)	Std. error	*p*-value
Factor 2 *"MSWB is competitive with concrete construction"*	Lobbied	Not lobbied	-0.543	0.191	0.006
	Not lobbied	Does not know	0.502	0.281	0.079

Table 7. Multiple Comparisons ANOVA for respondent groups who have worked in their current position in the field of urban planning ≥10 years.

Dependent variable	(I) Group	(J) Group	Mean difference (I-J)	Std. error	*p*-value
Factor 1 *"MSWB is characterized with solid sustainability benefits and quality properties"*	Lobbied	Not lobbied	-0.337	0.199	0.098
Factor 2 *"MSWB is competitive with concrete construction"*	Lobbied	Not lobbied	-0.600	0.216	0.008

level, statistical evidence on the differences exist between the lobbied and non-lobbied urban planners regarding both Factor 1 and 2. Thus, especially among urban planners with profound experience in their current working position, lobbying seem to have broadly affected their perceptions both of the sustainability benefits and quality properties of MSWB, as well as the competitiveness of MSWB with concrete construction.

5. Discussion and Conclusions

The construction sector is among the economic activities that can potentially make a greater contribution to societal goals for sustainable development by adopting more sustainable material choices. In the context of urban planning, professional planners have a key local-level role in influencing the implementation of national building codes, and thereby in making sustainable material choices. As wood is increasingly recognized as a potential alternative to concrete in multi-story construction, there is a keen interest to understand urban planners' perceptions of MSWB, and to what extent these planners face material-related lobbying attempts.

From the perspective of authority, according to Säynäjoki et al. (2014), in Finland urban planners have significant opportunities to advance sustainable development through land use management decisions. Moreover, regarding communication and avoiding conflicts, they are also in a key role when making zoning decisions within municipalities (Peltonen & Sairinen 2010). Instead of being governed, e.g., strictly by normative judicial practices connected to municipality-related legislation and norms, even compared to other Nordic countries, Finnish urban planners have a lot of room to make their autonomous choices in zoning and material-based decision-making procedures (Hytönen 2016). Thus, being a potential subject of influencing is not separate from planners' official professional task, but a part of the general request of being moderators of change, e.g., in different types of collaboration. For example, according to Lazarevic et al. (2019), organizational practices in the municipalities, and through relevant actor-network reconfigurations, would be one prominent avenue to accelerate MSWB market diffusion in Finland. Related to this, the focus in our study was to assess urban planners' perceptions of MSWB, and also to evaluate whether lobbying attempts perceived by these planners seemed to be linked to their expressed views on MSWB.

Our results from the factor analysis on survey-based data collected from the 26 largest municipalities in Finland suggest that urban planners see using wood in MSWB, on the one hand, from the perspective of its solid environmental and other quality properties in buildings (Factor 1), and on the other hand, from a more generic technological and regulatory perspective, compared to concrete material (Factor 2). Furthermore, evidence of lobbying efforts aimed towards urban planners in Finnish municipalities was found. However due to the characteristics of the data, we are unable to conclude, e.g., what kinds of organizations have attempted to affect the urban planners, what have been the actual influencing processes, and in what ways these attempts may have affected more specific opinions of planners on MSWB.

The results of our study also indicate that lobbying efforts in Finland are aimed to a greater degree at more experienced municipal planners. Definitive reasons for this observation cannot be deducted based on the collected survey data, but a few potential explanations can be suggested, and, although it can be assumed that the likelihood of being exposed to lobbying increases in the course of time, it is probably not the only explanation for the phenomena. Since especially in the Finnish context, urban planners have a considerable amount of power as decision-makers within municipalities, it is likely that the ones with the longest working experience are also the most targeted with lobbying efforts.

First, compared to less experienced planners, the most experienced professionals have been in both formal and informal (Hillier 2000) dialogue with different stakeholders (e.g., politicians, associations, governmental experts, companies, citizens) for the longest time, especially in a specific position in a particular municipality. Due to their experience, these planners are probably considered as more powerful actors (Falleth et al. 2010 cf. Wøhni 2007) with the potential to make more of an impact in the planning processes, compared to the ones with less experience in their position. Second, social network processes and structures evolve over time (Borgatti & Halgin 2011). Thus, targeting the lobbying efforts towards the most experienced planners within a particular municipality may be expected to result in broader networking impacts on the urban planning processes, increasing the effectiveness of lobbying attempts. Third, trust is fundamental between urban planners and different stakeholders and is based on their

past interactions, reputations, shared values, and social similarities (Laurian 2009). Consequently, planners with the longest experience, especially in specific tasks, have likely gained professional credibility, adding to their attractiveness as lobbying targets. Fourth, sometimes the line between communication and influencing can be a fine one, e.g., when trying to find efficient practices to enhance the diffusion of new types of building practices or in striving to avoiding conflicts between different stakeholders. As the tasks of facilitating dialogue and increasing network power fundamentally belong to the urban planners (Booher & Innes 2002), it is probably the most experienced professionals who are integrated in the most challenging land-use decision-making processes that involve active lobbying efforts.

The planners' views associated with the competitiveness of MSWB compared with concrete construction consistently showed differences between the lobbied and non-lobbied planners. By contrast, regarding the opinions on the sustainability benefits and quality properties of MSWB, we found statistical evidence of differences between lobbied and non-lobbied planners only for the planners with more than 10 years of working experience in their current position. Again, this could be explained by the greater power associated with the experienced planners' positions and their more extensive networks. Previous research suggests that the lack of integrating ecological aspects into planning, which has been observed in urban planners, relates to a lack of professional education, experience, and communication with scientists and other experts on sustainability issues (Yli-Pelkonen & Niemelä 2006, Säynäjoki et al. 2014, Eliasson 1999). In addition, the relevant time horizon for the studies reaffirming the solid environmental performance of MSWB is only the past 10–15 years.

We should note that although the construction industry was identified as the party engaging in lobbying attempts, the results of our study do not provide additional information concerning a more exact identity of these lobbyists. Our data indicate that lobbyists have been both individual companies and various industrial interest organizations, but apart from that, we cannot conclude what types of companies or organizations they were. The construction industry as a whole constitutes several different actors within the building networks (Toppinen et al. 2019), such as architects, building material manufacturers, housing construction, and infrastructure contractors. Hence, it would be an oversimplification to suggest that the influencing attempts recognized by the planners are made by any single fragment of this industry.

Regarding the legitimacy of the planning process, an interesting result is that while nearly all respondents acknowledged influence from the general public (e.g., citizens), they did not acknowledge the influence of companies and industrial organizations. This may be due to legislation requiring public participation in urban planning processes, while business organizations are not required to participate. Due to this, it is probably easier for planners to recognize and admit to the existence of lobbying efforts from "legitimized" stakeholders. Still, business organizations appear to have influencing mechanisms aimed at urban planners, putting local democracy at risk for several reasons. First, although planners may recognize the influencing attempts and are able to manage them, if these attempts are not openly communicated in the municipality, they may pose a risk for social justice and the equality of people. Second, planners not even recognizing influencing attempts may be an even greater problem, as decision makers with a high degree of administrative power do not, in this case, perceive the risks in their roles as public authorities. Third, even if no influencing attempts are aimed at all the planners, we cannot rule out that some of them may not want to openly discuss the topic due to its sensitive nature.

A key limitation of our study is the implemented single-country approach and the use of convenience sampling, which limits the generalization of these findings beyond our sample. Therefore, future research should focus more explicitly on construction companies, associations, and consultants active in the building sector. To strengthen the legitimacy of participatory processes, studies should be conducted on whether business actors could also have some official participation role in the processes, in a similar manner as the general public and various civil society organizations. The role and importance of urban planners as, e.g., negotiation mediators between different stakeholders (Peltonen & Sairinen 2010) and active communicators enhancing sustainable construction (e.g., Rydin et al. 2007), has been recognized in myriad studies. In all, there seems to be a need for developing formal communication processes between planners and business organizations to support, e.g., the implementation of small-scale niche experiments, which could be drivers for systemic sustainability changes in

construction and housing (Holm et al., 2011). In addition, although we approached economic and social aspects of construction in our study, e.g., through themes related to local forest resource usage and the cost-efficiency of MSWB, a more comprehensive analysis of economic and social aspects of MWSB should be conducted in the future (see, e.g., Toppinen et al. 2013, Wang et al. 2014).

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