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Citation for the original published paper (version of record):

Desivyana, N., Farmakis, O., Cusumano, L. et al (2023). Challenges in the adoption of sustainable criteria in the Swedish property development industry. *Procedia Computer Science*, 219: 1752-1759. <http://dx.doi.org/10.1016/j.procs.2023.01.470>

N.B. When citing this work, cite the original published paper.

CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies 2022

Challenges in the adoption of sustainable criteria in the Swedish property development industry

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Abstract

The construction industry is facing an increased focus on sustainability and climate neutrality, causing property developers to implement new requirements into the procurement documents, which are also driven by the national agenda. This study explores the current state of sustainability practice among Swedish property developers and identifies the main obstacles to expand further the implementation of the sustainability criteria. How the property developers define and implement sustainability requirements has been assessed through qualitative semi-structured interviews, focusing on sustainability certification systems, Life Cycle Assessment (LCA), and social sustainability. The results show usage of sustainability certification systems for marketing purposes and high awareness and practice of LCA, even though the accuracy of LCA was questioned. This study also identified guideline gaps for circular economy and social sustainability measurements, which could relate to low initiatives from the certification systems.

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Peer-review under responsibility of the scientific committee of the CENTERIS – International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANagement / HCist - International Conference on Health and Social Care Information Systems and Technologies 2022

Keywords: sustainable criteria; property developers; sustainability certification systems; circular economy; procurement; social sustainability

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1. Introduction

The construction industry is one of the world's largest industries, where the building sector alone contributes to the 30% of the world's total greenhouse gas emissions [1]. Along with the industry's challenge of reducing its greenhouse gases emissions, the construction industry must still consider more traditional sustainability aspects, such as environmental, social, and economic sustainability.

The 17 United Nations' sustainability development goals [2] give a holistic perspective of sustainability, by considering a large variety of sustainability aspects, which are then treated and specified in various national documents but most importantly in the agreement held by the European Union called Paris Agreement [3]. Sweden has acted upon the Paris Agreement by introducing the climate neutrality agenda until 2045 and through the Swedish National Board of Housing (Boverket) that stipulated the new climate declaration regulation for new buildings in Sweden. The construction industry and the municipalities in Sweden also have similar agendas, for instance the Swedish construction and civil engineering sector's roadmap to climate neutrality [4]; climate neutrality agenda for the construction and civil engineering sector in Malmö, LFM30 [5].

The property developers who develop both residential and commercial buildings, have influence in the national policy exerted by the government [6] and along with their resources in technical and financial matters, are deemed as a considerable player to the transformation of sustainable development. However, the familiarity of construction companies on sustainable understanding, especially regarding the potential economic benefits of the implementation of circular economy in projects is still low [7]. When talking about sustainability, plenty of efforts towards environmental and economic aspects have been performed. Conversely, social aspects commonly become the least priority compared to environmental and economic aspects [8]. The reflection of sustainability practices is also very dependent on the strategic market positioning seen by the property developers, whether they want to own the building in the short or long-term [9]. Currently, challenges on implementing more sustainable solutions are also shadowing property developers.

In this regard, a driving factor for the construction industry's sustainable development is partly dependent on the clients' requirements defined in each project. There are no standard detailed guidelines for implementing sustainability neither in national nor company scope. The execution of sustainable efforts might differ between property developers, or even between different branches in the same company. How the sustainable requirements are declared, and which requirements are included, varies depending on the clients' perspective but also their willingness and initiatives [10]. Starting from those points, this study aims to give an understanding of how Swedish property developers define sustainability goals, how environmental sustainability such as certifications and Life Cycle Assessments are applied and drive the business, and how social sustainability factors such as working conditions and social well-being are considered.

Therefore, the following research questions are studied:

- What is the current status of sustainable practices among Swedish developers?
- What are the main obstacles of implementing sustainable criteria in the procurement phase?

2. Method

The study is executed by conducting qualitative research since the purpose of the study is to collect and analyse data, interpret results that are outcome of the social world, and investigate their relationship with the related theory by performing inductive analysis [11]. Therefore, to identify the challenges in the implementation of sustainable driven criteria by Swedish property developers, explorative and semi-structured interviews were selected to perform the qualitative research, while a literature review was executed to "engage critically with other researchers' ideas" [11].

2.1. Literature Review

For the literature review, a wide variety of academic papers were selected to compare the ideas developed with the results from the interviews. Thus, articles that discussed sustainability-driven criteria in developed countries

were chosen to match the profile of Sweden, while articles that involved private procurement were mainly selected. The literature review was also used to develop the questions for the interviews of the empirical part of the study.

The obstacle of the literature study was that only few academic papers referred to the Swedish market, but most importantly, the majority of academic papers discussed public procurement instead of private. Scopus, Google Scholar, and Science Direct databases were used to find the academic papers. The keywords adopted were sustainable-driven procurement, requirements, certification, circular economy, construction sustainability, etc.

2.2. Interviews

The interviews were conducted under the scope of the thesis named “Sustainability Driven Procurement of Building Projects – Incentives and Driving-Factors from the Clients’ Perspective”, which was published by Chalmers University in June 2022 [12]. A wide variety of property developers working primarily in Sweden were approached while trying to get a broad sample with different companies, varying in size and location across Sweden. The selection of the profiles of the interviewees was based on the need to facilitate expert knowledge, while having a comprehensive view of property development and procurement discussions. Therefore, the interviewees' profiles come from various backgrounds consisting of business, project, construction, and sustainability managers from property development companies. However, only eight of them were able to proceed with interviews.

The interviewees were offered the possibility of having the interview either online or in person. Due to location restraints and the Covid-19 pandemic, only three interviews were conducted in person, two of them in the interviewee's working space. For the online interviews, Microsoft Teams software was selected. All interviewees were asked for their permission to be recorded to be able to perform the transcription. The transcription was performed using Microsoft Teams and Microsoft Office Word software.

2.3. Data analysis

After completing the transcription phase, all interviews were collected and studied to gather all the views and important data that could be used for the thematic analysis. This process is described by Bell et al. [11] as "a process of developing a set of codes" that follow an inductive analysis pattern. This coding system is also proposed by Braun and Clarke [13] as an effective system for conducting thematic analysis. According to these authors, the steps involved familiarising with the data, generating codes, identifying possible themes, reviewing the themes, specifying, and mapping the themes, and producing a report on them. An affinity mapping software tool named Miro [14] was used to visualise the data and effectively perform the mapping to conduct this thematic analysis. The different points and views were collected in digital sheets and grouped with the same colours according to the patterns identified. Those groups were then discussed to distinguish their links and similarities, and titles were generated for each group. In sequence, these titled groups were matched together in themes, providing a broader perspective, followed by their analysis. During this procedure, many changes were implemented, and the groups were reconstructed when the discussion led to revising former decisions. This study is concluded by comparing the empirical results with the literature review to identify which statements can be reflected in the Swedish market and analysed by developing critical thinking on the assumptions described.

3. Frame of reference

The possibility of quantifying environmental sustainability by various certification systems (e.g., LEED, BREEAM, etc.) has proved to be the most common way to define requirements by the construction clients in the procurement [15]. There are various sustainability certification systems both international and domestic, which are developed by specific countries. On the one hand, Sweden has a national certification system called Miljöbyggnad, but still property developers have the tendency to choose international certification systems [17]. On the other hand, Sweden Green Building Council (SGBC) data in 2020 showed otherwise, with more than a thousand Miljöbyggnad-certified buildings compared to BREEAM-SE and LEED certifications [18]. Many researchers debated which certification is more sustainable and there seem to be an argument on whether BREEAM-SE has more limited focus

than LEED. It is a polemic that BREEAM-SE is focusing more on chemical substances, while LEED provided a space for users to do recycling and waste management in terms of circular economy aspects [19].

Both BREEAM-SE and LEED use point-based assessment by comparing the total achieved points, whereas Miljöbyggnad uses special rating assessment of a progressive rating system, starting from room scope to indicator scope, indicator scope to aspect scope, aspect scope to area scope, and finally area scope to the building scope [20], [21], [22]. Every certification also rates the sustainability level into a different category, Miljöbyggnad with Bronze, Silver, Gold; BREEAM-SE with Pass, Good, Very Good, Excellent, Outstanding; and LEED with Certified, Silver, Gold, Platinum. However, the point-based system used in some certifications is criticised to allow deception by compromising the deficiency of points in the complex criteria and replace it with the points from several “easily achieved” criteria. Additionally, certification is widely used rather than Life Cycle Assessment (LCA) [23].

Sweden has set a major goal to have net-zero greenhouse gases emissions by 2045. To realise this goal, authorities enforced (1st of January 2022) a new climate declaration regulation for all new buildings [24]. The climate declaration regulation obliged the property developers to calculate the climate impact of the construction phase of new buildings, using the database and guidelines provided by Boverket. In the Life Cycle Assessment (LCA), property developers require to include some mandatory elements that consist of the load bearing structure, the building envelope, and the interior walls. The development of climate assessment tools such as LCA is critical [25]. However, some obstacles arose deriving from the development of LCA, such as the comprehensiveness of the database, the complexity of analysis, and uncertainties of assumptions [25], [26]. The adoption of LCA to assess the impact of a whole building is still poor and not favoured [16], [25].

The social sustainability, as the poorest adapted pillar [8], is facing a severe hindrance on the measurement and assessment parameters [8], [16], [27]. This obstruction might exert negative influence on the evaluation of project tenders due to the absence of standards in measuring all criteria related to social sustainability [10]. The widely requested social criteria by clients in the procurement phase are safety, employee’s well-being, working conditions, discrimination, working hours and compensations formulated in ISO 140001 [15][28]. Some of clients’ requests are not only influencing the contractors but are also indirectly influencing the suppliers by requiring them to have the legal certification related to the workers’ rights and conditions. Contractors are demanded to collaborate with suppliers in the upbringing of social criteria and perform the delivery in accordance with the environmental criteria [29]. The secure logistic flow to deliver the right product, at the right place, and at the right time, is also one of the potential criteria since it affects the socio-economic surroundings [10], [30]. Another social sustainability effort, carried out by the client, is the hiring of local workers to create regional prosperity [15]. The implementation of social sustainability give advantage to both the society and the company. The companies are conscious of the advantages of social sustainability implementation, namely improvement of the workforce and positive reputation, while simultaneously aiding the maturation of the society [10]. Regardless all the benefits, clients are in most cases only demanding contractors to abide by the local regulations and collective agreements related to social rules [15].

4. Results

Life Cycle Assessment (LCA) is considered by the interviewees as a vital tool to assess environmental sustainability, quantified by CO₂-equivalent emissions. Although, Boverket has requested climate declaration from property developers, it seems insignificant to the interviewees’ way of working, since climate calculation has been performed by them in advance of the regulation. Nevertheless, many interviewees expressed concern on the credibility of the results occurring from the LCA analysis. This happened because of the different assumptions made in the process, that might be based on wrong hypothesis or data. For many interviewees, it was vital to have a well-defined system to frame all assumptions and direct it to the consultants performing the calculations. Even collaborating with the same consultants was considered crucial by some of the interviewees.

There is evidence that although all interviewees recognise the three pillars of sustainability, they seem to develop strict and defined criteria only regarding the environmental targets. Consequently, it appears that social sustainability is lacking the same interest by property developers. According to the interviewees, criteria on reducing the effect that the project has on the wellbeing of the surrounding area is only limited to discussions on how they can collaborate better with the contractors and other stakeholders or by requesting standard regulations, such as the noise

limitations. During the interviews, it occurred that most requirements were related to the working conditions and safety. However, this was only addressed by setting requirements to follow the respective legislation and the collective agreements. The interviewees mentioned the effort on checking contractors on whether safety and working conditions meet the expected standards or not. It was also highlighted that when a considerable number of subcontractors is involved, property developers have limited knowledge to which extent all requirements are met.

Furthermore, many interviewees expressed their concern in procuring positions for unemployed people and trainees, which are usually agreed in the contracts with specific percentages of newly hired employees, for each project. Nonetheless, the interviewees suggested that in reality contractors find it hard to meet those expectations and when they fail, property developers seem to have limited capabilities of holding the contractors accountable for not doing so. Therefore, some interviewees identified the need for stricter regulation, but also tools to measure the safety levels and other social aspects.

5. Discussion

Property developers are the foremost player in sustainability with the role of setting the agenda of the construction sector by specifying sustainable requirements in the project initiation and the procurement process. Nevertheless, property developers face challenges concerning building certification systems, the implementation of circular economy, climate declaration, and promotion of social sustainability. There is a recognition on the governmental implementation measures by property developers, however more tools and assistance regarding sustainability is expected.

5.1. Certification

The empirical results recognised that property developers prioritise certification systems to address sustainability, mainly environmental, when procuring and constructing new buildings. Ruparathna and Hewage claimed that certification is the most common requirement requested by clients when procuring [15], although the underlying motives behind differ in the empirical findings. It is also suggested that the principal reason for certification implementation is the possibility of converting environmental sustainability into numbers [15]. However, empirical results found in this study showed the implementation of certification is not merely about sustainable targets, but mainly related to value-adding aspects of the property. The certification is well-recognised for its environmental sustainability attributes by the potential owners.

Cole et al. argued that the Swedish property developers tend to choose international certification over domestic certification [17]. Still, the interview results in this study are dissimilar because the one-sided tendency of specific certification was not indicated, but instead the selection of certification system relied on various aspects. The interviews results proved that the property developers strongly use the certification for marketing purposes. This means that property developers adjust the type of certification based on the tenants' or market's preference, in connection with the value-adding perspective.

According to Todd et al., there is an indication for one certification being perceived as more sustainable, concerning BREEAM or LEED [19]. However, this is not explicitly identified in the empirical results. Still, some empirical findings supported that BREEAM-SE certification exerts a negative influence on the total points when property developers apply circular economy practices. This view is implicitly harmonious with the study of Todd et al. [19], which stated that BREEAM, concerning materials, gives less space for circularity than LEED. Also, both the interviewee and literature raised the notion of a point-based system being problematic. Turk et al. [23] mentioned that the point-based system of the certifications could be outsmarted by devious users, by gaining minor points from many easy-collected criteria rather than big points from hard-to-get criteria.

Factuality about zero evidence of tendency for specific certification, but rather well-known certification, shows that property developers are aiming to achieve attention from the market. The property developers are utilising certification as a tool to communicate and give an impression to the market of being a sustainable company. Another factor could be the business strategy in terms of the property ownership after the construction. There are some property developers who build the property to own and rent it out, hence obtaining long-term view of the property.

By these means, when property developers own and operate the buildings, high-cost investment with a long-term payback will most likely be considered. The long-term view allows property developer to think comprehensively and consider best-value decision when deciding the type of certification or even more extensive sustainable practices, such as installing solar panels or investing in wind energy. Others who build the property to sell it afterwards, will possess short-term perspectives that aim on generating as much value and profit as possible at one time. Therefore, the use of popular certification is important although its indicators may not involve some sustainability aspects, such as circularity.

5.2. Circular Economy

Circularity in the projects is seen as positive among the interviewees, but not prioritised compared to other criteria like certification. Todd et al. indicated the benefit of certification in attracting tenants, despite the fact that certification systems have not yet taken circularity into account [19], which is also confirmed by the interviewees who expressed a reluctance to sacrifice the certification for circularity. Circular economy practices are inhibited by the point-based certification system. The certification system should reconsider circular economy to be part of the indicators and generate incentives to stimulate the circularity practices by property developers. There is a need for a more holistic system that will cover expansive indicators and leave no room for deception of points.

Nevertheless, circular economy practices, such as reusing and recycling, do not always mean a holistic sustainable decision. The lack of tools for circular economy quantification makes it difficult for property developers to compare solutions. For instance, property developers meet a difficulty in deciding which solution is more holistic and whether to reuse some products that induce less climate impact but may only last few years, or to use durable materials that produce more climate impact but may have a longer lifetime. The lack of a consistent policy that would define circular economy practices in detail also hampers its efforts. Other than creating such policy, the government also plays a key role in educating the public about the importance of reusing materials.

5.3. Climate Declaration

The implementation of LCA is a topic that property developers currently focus on. Nevertheless, this has no connection with the governmental influence on inquiring obligatory climate declaration. This phenomenon happens because property developers have previously used LCA to compare solutions, as affirmed by Eriksen et al. and Sterner [16][25]. The implementation of LCA is still in an early stage, since most of the property developers expressed the preference in formulating their own systems, databases, and assumptions, instead of exploiting the database developed by the government [26].

Another important aspect that should be considered is the fact that Boverket's climate declaration gives the freedom to property developers to decide from which phase the data will be based on, since they have the freedom to choose between predictions in the design phase or real numbers from the production phase. The interviewees preferred to provide calculations based on the data from the design phase, since those data are also used to take decisions. The interviews results did not identify the clients' requirement of crosschecking the contractors' practice on site and whether the practice is in accordance with the assumptions of the climate declaration or not.

5.4. The Intangibility of Social Sustainability

It is recognised that sustainability is divided in three pillars, and all pillars should be addressed when setting requirements that promote sustainability. Nevertheless, it can be recognised from both the literature and the interviews that social sustainability is the most neglected aspect of sustainability, as far as procurement is concerned. Eriksen et al. identified measurement issues concerning social sustainability [16], which is admitted by the interviewees who experienced obstacles in quantifying the value of social criteria. This is reflected in the criteria for the society wellbeing; however, it is only limited to discussions.

Specific social criteria mainly concern working conditions and safety requirements, which are primarily covered by the law. Nonetheless, the interviewees identified that even in those circumstances there are no tools to assess and

evaluate the levels of safety and compliance to the rules, while facing difficulties on holding them accountable, therefore calling upon stricter regulation. The problem disconcerts not only the property developers, but also the contractors because the contractors cannot track the effectiveness of the safety processes on site, especially when more subcontractors are involved.

The efforts to provide new job opportunities are addressed in the procurement by setting requirements on the number of positions offered, however the effectiveness of those proposals is risked by the fact that property developers do not have the means or consider it as substantial to hold accountability for non-compliance to the requirements.

It is positive that the property developers recognise the essentiality of social sustainability and have implemented attempts to address social aspects in their agenda. Although property developers appear to have goodwill toward social sustainable criteria, this is not enough. It is fundamental that the contractors also share the same mentality and understand the reason why those criteria are requested. The contractors should also have the perception of those requirements as compulsory, while understanding the benefits, especially when it comes to the procurement of new positions, investing on developing competences, and tracking the compliance of subcontractors. It is evident that if property developers are equipped with tools to measure social sustainability, then the way to procure social sustainability requirements will be simpler. Most importantly, assessing the success in social aspects would become an easy task.

Likewise, the government and the municipalities should regulate, after discussing with property developers, on requirements that affect the wellbeing of society. An efficient logistic deliveries plan could be proposed for the procurement, that will also assist on developing solutions like developing local construction logistics centres (CLC) [30]. In sequence, logistics considerations could be linked with a more efficient LCA analysis that would affect positively the calculations on CO₂ emissions.

It must be recognised that the effect of the environmental attributes is easily identified by the tenants, especially with the implementation of certification which concerns more environmental targets. Coming down to social sustainability, it is neither reflected in the certification nor valued by the tenants.

6. Conclusions

This study demonstrates that property developers have implemented sustainability in their requirements. However, they still face challenges on adopting sustainable criteria in the projects' procurement. The research suggests that these findings are linked with the problematic systems of building certifications, the polemic in the implementation of circular economy, vague criteria in climate declaration that do not consider the whole lifecycle of the building, and measurement issues regarding social sustainability, which could also be related to deficiencies in the certification systems or the governmental regulations.

Property developers have recognised the importance of sustainable practices in their business. The environmental criteria are the most frequent topic discussed and requested in the procurement stage, being contributed by the existence of calculation tools (e.g., LCA) and certification systems. Notwithstanding that certification systems comprise social sustainability aspects, they are framed in a decreased extent compared to the environmental aspects. Sustainable criteria established by property developers in the procurement phase are a dependent variable of the market, meaning that sustainability practices follow the interest of the market. The circumstances of the attentiveness of Sweden's public towards sustainable development, drives property developers to apply sustainability since the demand in the market is derived from the Swedish residents. Acknowledging that certification makes it possible to appraise sustainability levels while being a comprehensive way for the public to understand those levels, property developers strive to implement a high level of certification to illustrate their efforts. Therefore, the market finds attractive this type of certifications and gives value to it, thus property developers buy or rent property that is certified. All in all, the property development industry is following the market, thus fulfilling the demands of the market, to generate more profit.

The results of this study are limited only to the Swedish market, since only eight property developers from Sweden were interviewed, working primarily with budlings for offices or residential purpose. The size of the businesses varied by interviewing companies with only two employees, to companies with more than one hundred

employees. The research ideas for further studies can be related to aiming for a holistic approach to the issue by seeking a European sample and even carrying out surveys. An interesting view may be to approach the issue from a different perspective, hence the perspective of the tenants, government, or contractors.

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