ОБЩЕСТВЕНИ КОМУНИКАЦИИ И ИНФОРМАЦИОННИ НАУКИ
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DETERMINATION OF A SUSTAINABILITY CERTIFICATION SYSTEM AS A BASIS FOR THE DEVELOPMENT OF A SUSTAINABILITY CONCEPT FOR THE CONSTRUCTION OF PRODUCTION FACILITIES OF INTERNATIONAL AUTOMOTIVE SUPPLIER GROUPS

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Abstract: *A comparative presentation of the current sustainability strategy of automotive supplier groups from Germany with the criteria of the most common sustainability certificates for sustainable construction is carried out using the example of Continental AG. By assigning the evaluation priorities and the individual criteria of the different sustainability certificates to the desired Group goals in the area of sustainability, the sustainability certificate can be determined that has the most correspondence with the goals to be achieved in the sustainability strategy.*
By comparing the individual requirements, a recommendation for action is generated for companies in the automotive supplier industry for the selection of suitable sustainability certificates.
The aim of these recommendations for action is to sustainably optimize industrial buildings of automotive supplier groups on the basis of scientific findings and at the same time to reduce costs and contribute to the strategic objectives in the area of corporate sustainability by choosing a suitable sustainability certificate as the basis for the implementation of construction measures.
Keywords: *sustainability, industrial buildings, certficates, strategies*

INTRODUCTION

Leading industrial groups in the automotive supplier sector are aware of their responsibility towards the environment and society and are making both the company and the products manufactured sustainable. To this end, Continental AG, for example, has set itself the task of realizing certain sustainability goals and has committed itself to doing so in the Sustainability Report 2018 and in the Continental Environmental Strategy.

Consequently, the Group's construction and real estate department is also obliged to implement the sustainability principles and contribute to achieving the environmental goals it has set.

Numerous assessment and certification systems are available worldwide for assessing the sustainable quality of buildings. The most relevant and marketable certification systems for private buildings in the international market are LEED (U.S. Green Building Council), BREEAM (U.K. Green Building Council) and DGNB (German Sustainable Building Council) (cf. Statista 2004).

Various studies in Germany show that there is a different understanding of the term "sustainability". Of the three aspects of sustainability, ecology, economics and sociology, the ecological and economic aspects of sustainability are often preferred (cf. Ernst & Young 2013).

Derived from this, in addition to the different definitions of sustainability presented above, there are also divergent definitions of terms and concepts for buildings. The designations range from zero-energy, passive or low-energy houses to "green buildings" and "sustainable buildings". Behind each of these terms are different concepts that address and realize different sustainable qualities. The three terms zero-energy, passive or low-energy house focus on the energetic qualities of the buildings, i.e., the primary energy demand in the use phase, while "green buildings" encompass the ecological and social dimension

of sustainability throughout the entire life cycle.

In the case of "sustainable buildings", the third dimension, the economy, is added in the life cycle assessment.

Many national and international assessment and certification systems provide proof of compliance with these sustainability aspects and sustainability criteria in the building under consideration with the associated seals of approval and certificates. However, there is no national or international uniform standard in the evaluation system and its contents. For example, the results of certification by different institutions differ greatly.

Based on the assessment of the extent to which the existing sustainability certificates LEED, BREEAM and DGNB reflect the sustainability requirements of an automotive supplier group in industrial construction projects in a meaningful and economical way, a further recommendation for action is created.

RESEARCH METHODOLOGY

Every internationally active automotive supplier group has its own individual requirements for the implementation of sustainable concepts. One aspect of sustainable trade is the construction of new industrial facilities. To develop a goal-oriented concept, the corporate goals must be compared with those of the sustainability strategy and integrated at all levels of the company.

For the development of the sustainable concept for the Group's construction sector, three main stages must be examined.

The first step is to analyze the Group's sustainability strategy. Based on a survey of relevant stakeholders by means of a questionnaire, various aspects were divided into very relevant and relevant subject areas. These already defined topics must be analyzed regarding their relevance for the construction of new industrial buildings. To this end, the topics and the sustainability goals set are listed in an evaluation matrix. These criteria are then classified according to whether construction activities in the field of industrial buildings have an influence on the achievement of the target of the criterion.

At the same time, the main criteria with their sub-criteria of relevant international sustainability certificates must be examined. As a basis for the selection of the sustainability certificates for buildings to be considered, an internet search is carried out. An evaluation matrix with criteria is defined in order to be able to check which sustainability certificates can generally meet the requirements of the German, internationally active automotive supplier group.

In the next step, the results from the analysis of the sustainability strategy of the automotive supplier group will be evaluated with those of the selected sustainability certification systems in a weighted evaluation matrix.

The aim of this study is to determine an existing sustainability certification system with the greatest agreement with the sustainability requirements of the automotive supplier group to obtain this as a basis for the development of an individual sustainability concept for the automotive supplier group's construction sector that is tailored to the automotive supplier group.

RESULTS

Group Requirements

In order to be able to develop a suitable sustainability concept for new industrial buildings of a German international automotive supplier group, the first step is to determine the Group's existing requirements with regard to sustainability.

By 2050 at the latest, the Continental AG Group and its partners along the supply chain are aiming for the following four goals (cf. Continental AG 2023):

– 100% carbon neutrality,
– 100% emission-free mobility and industries,
– 100% closed resource and product cycles,
– 100% responsible sourcing and business partnerships.

In the first quarter of 2019, Continental AG conducted a comprehensive survey of various stakeholders on the topic of "Impact Evaluation".

Based on the results of this survey, a total of twelve topics were defined. These twelve thematic areas were further classified into strategic and relevant focus areas.

The four areas with a strategic focus are (cf. Continental AG 2023):

– Carbon Neutrality;
– Emission-free Mobility and Industries;
– Circular Economy;
– Responsible Value Chain.

The eight relevant topics are:

– Innovation and Digitalization;
– Green and Safe Factories;
– Long-term Value Creation;
– Good Working Conditions;
– Benchmark in Quality;
– Safe Mobility;
– Sustainable Management Practice;
– Corporate Citizenship.

Even though the topic of sustainable construction cannot be explicitly found as a strategic or relevant topic in this overview, it does have a non-negligible influence on the achievement of the Group's sustainability requirements. The new industrial building contributes to achieving the Group's goals in the following nine areas: Carbon Neutrality, Circular Economy, Responsible Value Chain, Innovation and Digitalization, Green and Safe Factories, Long-term Value Creation, Good Working Conditions and Sustainable Management Practice, Corporate Citizenship.

Selection of sustainability certificates to be examined

There are many national and international sustainability certification systems around the world that confirm the sustainability of a building. In order to be able to make a selection of a certification system, various criteria must be considered.

In addition to the project details, desired building qualities and costs, the subsequent use of the building plays a decisive role in the selection of a suitable certificate. Criteria are required for the selection of a certification system, which leads to the decision for one or more systems in the form of a recommendation with cost forecast. The criteria of marketing, building performance as well as construction and planning costs, and group requirements for sustainability goals determine an initial trend of the certification level with a limitation of the certification system, while the project information influences the usage profile. Three certification schemes were selected for further investigation. The focus in the selection was on the criteria:

– International applicability of the certification system;
– Awareness of the certification system;
– Consideration of the three sustainability aspects of ecological, economic, and social sustainability.

The American certification system LEED, the British certification system BREEAM and the German certification system DGNB were selected for further investigations due to their global awareness and dissemination as well as consideration of the three sustainability aspects.

Choosing a Sustainability Certificate

In order to be able to determine the relevance of the individual sustainability criteria to the Group's nine construction-related sustainability areas, they were assigned to the individual areas. In addition to the three sustainability aspects of ecological, economic, and social aspects, the following aspects of the certification systems technical quality, process quality and site quality were considered in the allocation.

The following sustainability criteria can be assigned to the Group's subject areas under the following sustainability aspects:

Carbon Neutrality

– Ecological quality: Life cycle assessment – emission-related environmental impacts, Risks to the

local environment und Life cycle assessment – Primary Energy;

– Social quality: Bicycle comfort;

– Location quality: Micro-location, Transport, Proximity to objects and facilities relevant to use.

Responsible Value Chain:

– Ecological quality: Environmentally friendly material extraction, Recyclability of the materials used.

Circular Economy

– Ecological quality: Environmentally friendly material extraction;

– Technical quality: Ease of dismantling and recycling;

Innovations & Digitalization

– Socio-cultural and functional quality: Methods for urban planning and design conception;

Long-term Value Creation

– Economic quality: Flexibility and repurposability;

– Process quality: Quality of construction and commissioning;

Green and Safe Factories

– Socio-cultural and functional quality: Thermal comfort, Indoor air quality, Acoustic comfort, Visual Comfort, User influence, Safety and Incident Risks, Accessibility and safety, public accessibility;

– Technical quality: Fire protection, sound insulation, Building, Durability of construction projects, Equipment quality and user-friendliness of the Utilities, Resistance to hail, storms and floods, Ease of dismantling and recycling;

– Process quality: Prerequisite for optimal use and management, Construction site / construction process, Quality of construction and commissioning;

– Location quality: Micro-location, Expandability/ Reserves;

Good Working Conditions

– Economic quality: Flexibility and repurposability;

– Socio-cultural and functional quality: Thermal comfort, Indoor air quality, Acoustic comfort, Visual Comfort. User influence, Outdoor space quality, Safety and Incident Risks, Accessibility and safety, public accessibility, design and art, floor plan quality;

– Technical quality: Planning integrals;

– Process quality: Prerequisite for optimal use and management;

Sustainable Management Practice

– Economic quality: Building-related costs in the life cycle, Marketability;

– Process quality: Prerequisite for optimal use and management;

Corporate Citizenship

– Process quality: Prerequisite for optimal use and management.

All criteria were assessed based on their relevance to the Group. 0 points were awarded for no requirement, 1 point for low requirement, 2 points for medium requirement and 3 points for high requirement. Subsequently, the points achieved were set in relation to the maximum total number of points achievable to determine the percentage coverage of the criteria of the sustainability certification systems with the Group's requirements for its sustainability topics.

Table 1. Compliance of certification criteria with the sustainability goals of the automotive supplier group

Area	**LEED**	**BREEAM**	**DGNB**
Carbon Neutrality	13	15	20
Responsible Value Chain	2	3	6
Circular Economy	2	3	6

Innovations & Digitalization	3	3	6
Long-term Value Creation	3	3	5
Green and Safe Factories	22	24	46
Good Working Conditions	11	10	37
Sustainable Management Practice	1	4	9
Corporate Citizenship	0	2	3
Total points out of 156 points	57	67	138
Coverage in % certification system vs. group requirement	**37%**	**43%**	**88%**

CONCLUSIONS/DISCUSSION

As can be seen in Table 1, none of the international certification systems fully meets the sustainability goals of the automotive supplier Continental AG. However, compared to LEED and BREEAM, the DGNB certification system most closely reflects the needs of the automotive supplier group in terms of achieving its own sustainability goals.

To develop an individual concept tailored to the Group, it makes sense to use the DGNB certification system as the basis for developing a sustainability concept that meets the requirements of the automotive supplier group and to further develop it accordingly.

The advantage is that an internationally known system is used as the initial evaluation system, which already has a large coverage of the Group's sustainability goals and will contribute to the achievement of the Group's sustainability goals worldwide through sensible adjustments.

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ОПРЕДЕЛЯНЕ НА СИСТЕМА ЗА СЕРТИФИЦИРАНЕ НА УСТОЙЧИВОСТ КАТО ОСНОВА ЗА РАЗРАБОТВАНЕТО НА КОНЦЕПЦИЯ ЗА УСТОЙЧИВОСТ ПРИ ИЗГРАЖДАНЕТО НА ПРОИЗВОДСТВЕНИ СЪОРЪЖЕНИЯ НА МЕЖДУНАРОДНИ ДОСТАВЧИЦИ ЗА АВТОМОБИЛНАТА ИНДУСТРИЯ

Резюме: *Сравнително представяне на текущата стратегия за устойчивост на групи доставчици за автомобилната индустрия от Германия с критериите на най-често срещаните сертификати за устойчиво строителство се извършва с помощта на примера на Continental AG. Чрез присвояване на приоритетите за оценка и индивидуалните критерии на различните сертификати за устойчивост към желаните групови цели в областта на устойчивостта може да се определи сертификатът за устойчивост, който най-много съответства на целите за постигане в стратегията за устойчивост.*

Чрез сравняване на отделните изисквания се генерира препоръка за действие за компаниите в индустрията на доставчиците за автомобилната индустрия за избора на подходящи сертификати за устойчивост. Целта на тези препоръки за действие е да се оптимизират устойчиво индустриалните сгради на групите доставчици за автомобилната индустрия на основата на научни открития и същевременно да се намалят разходите и да се допринесе за стратегическите цели в областта на корпоративната устойчивост чрез избора на подходящ сертификат за устойчивост като основа за прилагане на строителни мерки.

Ключови думи: *устойчивост, индустриални съоръжения, сертификати, стратегии*

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