Sustainability Assessment of Buildings as Part of Green Public Procurement – An Introduction

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ABSTRACT

The special session organized by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) will present and discuss the principles and tools for green or sustainable public procurement. On the basis of examples and experiences from Germany, transferable recommendations for action are to be developed.

Sustainable procurement is a key component in public administrations. With the introduction of the Guideline for Sustainable Building, the Federal Government has enforced an important component of its sustainability strategy in the public sector. In the first step, the Federal Building Authorities are obliged by edict to evaluate their buildings, using the Assessment System for Sustainable Buildings (BNB). BNB has become the most important tool to implement high quality standards. The actual task is, to establish good conditions for a broad implementation of the BNB into the daily work of the public sector in total. The BNB provides a practical tool for holistic sustainability assessment for federal buildings. It is specially adapted to the procedures and needs of the public sector and can therefore be used to support sustainable procurement. In addition to the federal government, this can also be applied by federal states and municipalities and other public builders / clients. Further information is available on the "Sustainable Building Information Portal", see www.nachhaltigesbauen.de.

In the workshop the German Assessment System BNB will be explained and discussed on the basis of two examples: the assessment of the refurbishment of educational buildings and the planning of new research and laboratory buildings including a sustainability assessment. Additional examples from Germany, Austria and Switzerland are presented. In other papers, the possibilities of using renewable energy to operate buildings, as well as the application of principles of integral design, are discussed. It is planned to discuss with the participants the application possibilities of sustainability assessment systems for public procurement.

Keywords: *policy and regulation, sustainability assessment tool, public sector, procurement*

1. INTRODUCTION

The public sector has a special role and responsibility in the implementation of the principles of sustainable development. In particular, it fulfils tasks aiming at enabling the targeted control of social development. Besides safeguarding public interests, the objectives pursued include the conservation of natural resources and the protection of the environment and health. The public sector has a wide range of policy instruments to support the achievement of these objectives, including public procurement.

The public sector, considering its comparatively high share of investments, has a significant market power. The states or public authorities, in their role as a consumer, can stimulate the market towards environment-friendly and socially acceptable goods and services and promote the development and proliferation of environmentally and socially compatible innovations. Therefore, they can and should act as a role model in the field of the implementation of sustainable development principles.

Public authorities recognised at an early stage the importance of integrating environmental and social standards into the procurement processes, as well as the tendering and contracting procedures. There are various initiatives, guidelines and examples at both the international and European. A gradual transition from green public procurement (GPP) to sustainable public procurement (SPP) is also evident [EC, 2016b].

The GPP and SPP principles can also be applied to the procurement of buildings or the tendering and contracting of design and construction services. A prerequisite is the definition of clear goals for the performance of buildings. In addition to the specification of the technical and functional requirements, EN 15643-1 [CEN, 2010] recommends

setting goals for the environmental, social and economic performance of buildings. In order to take into account the objectives of sustainable development in the design, construction and use of buildings, guidelines, databases and tools, as well as sustainability assessment systems, have been developed in Germany to support the public sector bodies. These can also be applicable to all types of clients and developers.

2. PUBLIC PROCUREMENT FOR CONSTRUCTION WORKS IN GERMANY

In Germany, adherence to the principles of sustainable development is an essential aspect of public procurement. This applies both to the design and construction of new buildings (high performance buildings) as well as to refurbishment projects (deep building renovation). This is linked to a long tradition which goes back to the nineties. Although the procurement activities were initially focused on the aspects of the environmental friendliness of buildings and issues related to the selection of construction products, already since then, the situation has started changing. The attention has consistently started been directed towards the implementation of sustainable development principles in the design, construction and operation of buildings and construction works. To promote activation and provide support, the round table “Sustainable Building” was established by the Building Ministry, where both industry and science are represented.

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) formulated with the Guideline for Sustainable Building essential requirements for federal buildings. This provides an important basis for the sustainable procurement of buildings. Additionally, it forms the basis for a set of databases and tools required for sustainability assessment. All these have been produced with public funds and are freely available – see www.nachhaltigesbauen.de.

The Assessment System for Sustainable Building (BNB) provides a tool which supports the design and assessment of sustainable buildings and is used in public procurement. The BNB addresses the three dimensions of sustainability simultaneously and equally. In addition to sustainability requirements, also requirements for the technical and functional performance of the building, as well as requirements for the quality of the design, construction and management processes, are formulated within this system. The assessment is based on a predominantly quantitative approach including the use of both life cycle assessment (LCA) and life cycle costing (LCC).

For the application of BNB various work aids and data sources are available. Among others, the provision of basic data for the calculation of Life Cycle Analysis (LCA) and Life Cycle Cost (LCC) is necessary. This data is stored in freely available databases. Additionally, calculation and documentation tools are available for simplifying the application of BNB, while preventing multiple entries. Guidelines and system-specific brochures provide basics principles for calculation and assessment and up-to-date information – see http://www.nachhaltigesbauen.de/sustainable-building-english-speaking-information/publications.html. For the early design stages and design competitions, special tools are available. The BNB system comprises various types of buildings (e.g. office buildings, educational buildings, laboratory buildings, etc.) as well as defined building-related tasks (e.g. design of new buildings, optimisation of the operation of existing buildings, refurbishment projects). It can be transferred to other building and use types.

3. PRACTICAL EXPERIENCES

The sustainability aspects must be integrated throughout the entire design and procurement process. This begins with a uniform sustainability understanding, the basic decision about the start of design and construction work and the formulation of goals already in the task definition (client’s brief). It is possible to take into consideration sustainability aspects already in the early design stages and in the assessment of competition entries.

Sustainability assessment systems can initially be used as a checklist of sustainability criteria. It is a way to ensure that all relevant topics and requirements (including the ones related to sustainability) are taken into account in the design of buildings. Sustainability assessment systems are therefore evolving into tools ensuring the consideration of the “overall performance” of buildings.

Individual requirements and standards for the relevant characteristics of the building are indicated through the provision of benchmarks and quality levels as design and decision-making tools.

It has been proved to be of fundamental importance to ensure the consideration of sustainability aspects in terms of its “breadth”. This means to ensure a complete treatment of all aspects - from aspects related to the technical and functional quality to aspects related to the environmental, economic and social performance of buildings. Additionally, information about the quality of the site has to be provided. This is not be assessed, but only treated as additional information. However, the quality of the design and execution processes is also assessed.

In Germany, the compliance with sustainability requirements must be demonstrated not only as a whole (presented as a percentage of compliance with all the requirements), but also in its subparts, and therefore, the compliance with the requirements of every single “pillar”. In the early design stages, it has proven useful to define individual indicators.

One way of further developing and refining the sustainability assessment systems and the qualification of the employees is the exchange of experience. In Germany, the Network for Sustainable Federal Building was set up for this purpose.

4. CONCLUSION

The development and application of sustainability assessment systems assist in the integration of sustainability aspects into public procurement. Developing special system variants for the public sector has the advantage that the special requirements and objectives of these institutions can be addressed. In Germany, for the remaining real estate market, the sustainability assessment system DGNB (German Sustainable Building Council) is available. It was developed and introduced in parallel with the BNB system.

It is recommended not only to use a sustainability assessment system during the design process, but also in view of obtaining a certificate or label showing the level of overall performance that has been achieved. Experience in Germany has shown the advantages of defining objectives and targets for all partial requirements. This facilitates the design process.

Besides having data and tools available, it is also important to maintain and expand the competence of the public sector in the field of design, construction and operation of buildings. In Germany, a special training program has been set up and established for the further education of public employees on the topic of sustainable construction. Through this program, they become more receptive to their responsibility as customers in the area of sustainable construction and are better prepared to integrate the relevant sub-themes into the task definition, tendering and awarding of public contracts. Additionally, they are better equipped to ensure the quality of the design and execution.

It is also important to consider sustainability aspects in the use/ operation of buildings. This is closely linked to sustainability reporting on the public building stock.

REFERENCES

[1] [BMUB, 2013] Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). Systematik für Nachhaltigkeitsanforderungen in Planungswettbewerben. Retrieved from: http://www.nachhaltigesbauen.de/fileadmin/pdf/veroeffentlichungen/SNAP_1_Empfehlungen-korr.pdf

[2] [BMUB, 2015] Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). Guideline for Sustainable Building. Vol. 1, Berlin. Retrieved from: http://www.nachhaltigesbauen.de/sustainable-building-english-speaking-information/guideline-for-sustainable-building.html

[3] [BMUB, 2016] Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). Assessment System for Sustainable Building (BNB). Retrieved from: http://www.nachhaltigesbauen.de/sustainable-building-english-speaking-information/assessment-system-for-sustainable-building.html

[4] [CEN, 2010] European Committee for Standardization. EN 15643-1 Sustainability of construction works - Sustainability assessment of buildings - Part 1: General framework

[5] [EC, 2016a] European Commission. Green Public Procurement Criteria for Office Building Design, Construction and Management. Retrieved from: http://ec.europa.eu/environment/gpp/pdf/Guidance_Buildings final.pdf

[6] [EC, 2016b] European Commission. Green and Sustainable Public Procurement Retrieved from: http://ec.europa.eu/environment/gpp/versus_en.htm

[7] [EC, 2017] European Commission. Green Public Procurement Criteria – overview. Retrieved from: http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

[8] [PWC, 2009] PricewaterhouseCoopers. Collection of statistical information on Green Public Procurement in the EU - Report on data collection results. Retrieved from: http://ec.europa.eu/environment/gpp/pdf/statistical_information.pdf

[9] [UN, 2015] United Nations. Principles of Sustainable Public Procurement. Retrieved from http://www.scpclearinghouse.org/sites/default/files/10yfp-spp-principles.pdf