THE NEW UNIVERSITY CAMPUS OF PIRI REIS AND ITS BREEAM CERTIFIED BUILDINGS

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Abstract- This article is written to make the critique of Piri Reis Maritime University next to the Istanbul Technical University Maritime Faculty in Tuzla, of which the first academic year has started in 2014. The university campus received a BREEAM-very good certificate in the design stage. The campus, which is Turkey's first Breeam certificated campus, deserves to be counted as one of the best examples of today's green campuses with the interim certificate that it got. This is why it will be studied and analyzed in this paper. Over this successful example, the current perception and definition of sustainable architecture will be criticized. In order to do this, interviews were conducted with three experts, who are the Breeam assessor, an architect and a landscape architect of the design team of the project. As the result of this study, it is seen that the effort spent is really too much and the project responds to this effort by achieving what is attempting. However, the checklists cannot be always enough to guarantee the quality of a work of architecture.

Index Terms- Breeam Certificate, Green Campus, Istanbul, Piri Reis Maritime University.

I. SCORING AND RATING

Scoring and Rating is first made under the title of management and in this part the building is appraised and assessed according to the commissioning, consideration of constructors, construction site impacts, building user guide and life cycle costing. The whole project team; the mechanists, electricians, architects, landscape architects, etc.; have been consulting by the assessor firm which is Turkeco for this project. The working mechanism of the project team is based on first the informing of the team by the assessor, and then the revisions of the project under the supervision of the assessor until getting the required scores for the certification. During this process, the coordination between different team members is provided also by the assessor.

The second title in the rating system is health and wellbeing. Under this part, daylighting, view out, glare control, high frequency lighting, internal and external lighting levels, lighting zones and controls, potential for natural ventilation, indoor air quality, volatile organic compounds, thermal comfort, thermal zoning, microbial contamination, and acoustic performance are taken into consideration. With regard to these criterions, I'd like to give some examples to explain the progress of the work of different professionals in the project team. The architect Erhan Ilıcalı working in the Kreatif Architectural Office as a member of the project team, with whom I conducted interview, explained that they would design almost the same buildings even though they didn't have the aim to get Breeam certificate. He said that the experience and knowledge of the office and the consciousness level of the employer are far more influential than the guidance of the Breeam assessor and continued the Breeam assessor only caused some little changes in their design. In the case of day lighting, with the advise of the assessor they only have changed the dimensions of windows and enlarged them a little downwards, because the natural lighting was not in the interval suggested by Breeam. So basically, the assessors only check the quantitative results of the design and try to manage these quantitative data to be in the interval of suggested values. The overall design and solutions depend on the architectural office. When we return to the subject of daylighting, architect Ilıcalı declares that they would design the same solar shading panels in the north and south facades, which prevents the direct sunlight from west, and the same double skin façade system in the facades facing to the east and west. He underlined that there is no effect of Breeam certification in their main design decisions. The method used for natural ventilation, which is taking the fresh air inside through the windows of technical rooms in the east and west facades and let it float due to density difference to the other spaces of buildings, is also chosen without any enforcement of the certification system. The landscape architect Begüm Özerk from Arzu Nuhoğlu Landscape Design Company explained that the part health and wellbeing affected their design project through the noise pollution and number of urban furniture for sitting. She also declared, even though their project is not evaluated by Breeam rating system, they would propose the same green buffer zone to prevent the noise pollution and enough number of benches as they did in their previous projects. In this respect, it is also obvious that application for the Breeam certificate doesn't affect the landscape design studio's decisions for health and wellbeing aspects.

Rating is thirdly made under the title of energy and in this part the building is appraised and assessed

according to the reduction of the CO2 emissions, sub-metering of substantial energy uses, sub-metering of high energy load and tenancy areas, external lighting, low or zero carbon technologies, building fabric performance & avoidance of air infiltration, cold storage, lifts, escalators &travelling walkways. For the on-site energy generation in campus, photovoltaic panels and trigeneration system have been used. This system is based on the principle of the reuse of the exhaust fume and heat to generate energy, which are given off through natural gas use. Architect Ilıcalı states that this system is mainly preferred in large industrial buildings due to the high initiative investment costs. But, this is the first time use of it in an educational building in Turkey and through the use of it 70% of the energy consumed in campus is produced on site. In this part, it is also essential to mention about the energy efficiency of heating, cooling , lighting, and ventilation. The heating and cooling of buildings are done through the circulation of hot or cold air in pipes, which are located underneath the floors and the 30 cm-high-convectors, which are located in classrooms. The air, circulated in pipes, is stored in an air reservoir and, it is heated or cooled there with the help of water. This water is extracted from the sea from the depth of 15 m., because the campus is located in shore. This causes constant supply of 15 celcius degree water through the whole year. This results in the use of much less energy for the heating of water in winter time and cooling in summer time. For lighting and ventilation, different sensors are used. In order to prevent the user errors, the whole system is operated automatically. In overcast sky, the sensors detecting the insufficient daylight make the lighting turn up. In the same way, the sensors detecting the decrease in fresh air inside make the ventilation system send fresh air. As a result of this automatic operation system, the energy use is minimized. For the minimization of energy use during the operation process of buildings, the assessor firm Turkeco also provides consultancy for the lighting and elevator choice, which spent less energy than the traditional ones do. However, the last decision is always depends on the designer.

The next title coming after the energy section is transport. The subtitles in the transport section are provision of public transport, proximity to amenities, cyclist facilities, pedestrian and cyclist safety, travel plan, maximum car parking capacity, travel information point, deliveries and manoeuvring. In this section, the project firstly got a high mark from its location because of its proximity to the bus and minibus stops. Secondly, in order to use the potential of campus' advantageous location, cycling paths and cycle stands are designed in abundant numbers to incite alternative transport methods and to get another high mark. However , the landscape architect Öztürk expressed her worries about the danger of these paths and stands turn into unnecessary hardscapes. She mentioned about the necessity of longer cycling paths, which connect the campus to the near surrounding. Unfortunately, because there isn't a criterion in the rating system to get points from such a cycling path network, nobody asked the municipality for it and the cycling paths projected only in campus.

Scoring and Rating is fifthly made under the title of water and in this part the building is appraised and assessed according to the water consumption, water meter, major leak detection, sanitary supply shut-off, water recycling, irrigation systems, vehicle wash, sustainable on-site water treatment systems. I'll start firstly with the water used inside the buildings. Taking the water from the sea, storing, and reusing it by refining take an important place in the project, because the campus is located in water shore. A building, which stores the water used in campus, is arranged underground right behind the seashore. It is aimed to use that stored and refined water in sinks and tubs. And afterwards, it is aimed this time to reuse the water coming from sinks and tubs in flush tanks. In the whole project, in general, reusing every source becomes a rule. In addition to the water used in buildings, the water used for irrigation is considered also very carefully. The landscape architect Öztürk stated that they have chosen to use the drip irrigation system, which consumes the least water among the other irrigation systems. She also mentioned about the absence of turf, because it needs too much water and this causes the project to lose points. It's obvious that seeking for a Breeam certificate with a good score shares in the creation of a project consuming and recycling the sources and wastes in such a sensitive and responsive way. It is also inevitable this sensitivity to cause a sharp increase in the initiative investment cost of the project. The architect Ilıcalı also remarked that it's really expensive having a Breeam certificate. However, European Union gives a grant to projects, which aimed to get European green certificates. This points out that there will be an ongoing increase in the number of certified buildings in the future.

The next title coming after the water section is material. The subtitles in the material section are materials specification (major building elements), hard landscaping and boundary protection, reuse of building façade, reuse of building structure, responsible sourcing of materials, insulation, designing for robustness. Katya Kaya, the Breeam assessor from Turkeco, expressed that the projects in Turkey lost points mostly from material and energy sections. Still, in Piri Reis campus project, it is gained 5 out of 6 in material section. At this point, it's useful to tell a little about how the rating in Breeam certification system is done. In Breeam, there isn't a radius restriction for the location of the procurement of materials. So, even though the place, where you

brought the material is far away, you don't lose any point. In this instance, the decision for material procurement is made according to the price. And, there are some definite rules for the standardization of the quality of materials. Indeed, Breeam is not a rating system, which has the material choice obliged to one single list. It encourages the use of local materials and designer's choice as much as possible. What is expected is the proof of the quality of the material. Responsible sourcing of materials, which is one of the subtitles in material section, opens the door of using any kind of material in case it's quality is proved. At this point, developing the standardization of materials in Turkey according to the European Standards (ENs) accelerates the process. The materials, having ISO certificate and manufacturing process diagram, are enough for Breeam to appraise and assess. The Breeam assessor of Piri Reis said that the certified wooden materials of the project are brought from Spain, because there isn't any certified wood in Turkey. However, all the adhesive and insulation materials and paints of Piri Reis are obtained from Turkey. The landscape architect Öztürk mentioned that the material list suggested by Breeam is two A4. And because such a material list is not sufficient at all, they have proposed new materials besides the list, which they want to use. And this process takes 3 months. She added that this could become much shorter and the designer's choices could be much more, if the quality proof and manufacturing process diagram preparations are done for each and every material.

In the next section, scoring is done under the title of waste and, construction site waste management, recycled aggregates, recyclable waste storage, compacter/ baler, composting and floor finishes are taken into consideration. As I said in the beginning of the article, Piri Reis University Campus is got its Breeam certificate with its design. After the construction and post-construction stages are followed and checked, the interim certificate will turn into the final certificate. While it was also possible in the past to get the certificate only with the design project, it's possible today to get the final certificate only after the evaluation of three phases. The importance of the construction phase for Breeam is the feasance of the project as it is projected. The assessor firm photographs the construction site regularly and shares the prepared reports with U.K. . Waste is a very important subject for the construction phase. Therefore, waste management is taken into consideration very carefully. In addition to this, it is thought also a composting mechanism, which presses and recycles the waste food. The landscape architect Öztürk stated that the issue of recycle takes place in their work as the arrangement of the recycle boxes' location. Breeam has the provision of existence of these boxes in 200 m. distance to the entrances, so that the vehicle, which will take the waste, can reach these boxes easily.

The last title, about which I'll mention, is land use and ecology. In this section; reuse of land, contaminated land, ecological value of site and protection of ecological features, impact on site ecology, long term impact on biodiversity are taken into consideration. Obviously, this section is mostly related about the work of landscape design studio. In Turkey, landscape architects can also work as ecologists. Thus, Ms. Nuhoğlu could analyze and evaluate the land. Ms. Öztürk complained about the lack of a database about the lands' ecological value and condition and the time loss caused by this deficiency. As a result of their investigation, they realized that the land of the campus is covered with an invasive plant species. These invasive plants obstructed the other species, which have to exist in the area, and caused a decrease in biodiversity and in the quality of soil. Additionally, the campus' land is defined as a land with low ecological value, because there aren't plant species higher than 1 m. and whose radius are more than 10 cm. . Another very important subject, that they have paid a lot of attention in landscape design, was the determination of the existing habitat and the presentation of the new habitat with the new species gained. The new composed habitats were found valuable by Breeam. The aim to achieve with the new habitat was of course to plant the local species. And if the plants were not local, they were the ones, which increase the soil quality or attract the birds and insects to support wildlife. The landscape architect told that Piri Reis project was successful, because they, as a landscape design studio, worked in every phase of the project. Sometimes, there were some clients only looking for preparation of a Breeam report to their already designed project. I think that, even this last sentence is enough to capture the importance of consciousness level.

CONCLUSION

While this article comes to an end, I look at all this process and firstly see that there isn't a contribution of such a certification system to the increase in consciousness level of employers, employees, building occupants, or in general society. Especially, when the image and prestige of owning a building with certificate has been thought, it's possible to see all this process as a difficult exam preparation of a boring course. In order to get a high grade, the wooden elements of a building are brought from thousands of kilometers away. Nobody cares about the carbon emissions and energy spent in this journey, because it isn't included in the checklist. Or for building occupants, it's possible to lose environmental concerns, because they take refuge in living in a green building. They don't need to think of the food that

they didn't eat, or they don't need to turn off the tap that they turn on. They don't need to turn off the lights. Technology solves the problem for them. If someone has enough money to buy a "green" car, he or she can be even more environmentalist.

My second concern is about the increase in construction costs and financial support of European Union for certified buildings. In fact, as a country we pay in advance more than the grant that we got from European Union. Still, these supports seem like a part of the hidden competition between the developed world green building rating systems.

To sum up, it's too difficult not to have any doubt about the sincerity of the green building rating systems, which are dictated by developed countries to the whole world. We become environmentalists with their on paper grants and rules.

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