

AFYONKARAHISAR CHAMBER OF COMMERCE AND INDUSTRY BUILDING 06.2019



Introduction

TURKECO authorized Arzu Nuhoğlu Landscape Design for Gaziantep Metropolitan Municipality Building Breeam In Use Ecology Assessment. This document includes results of ecologic evaluation including enhancement prescription for biodiversity on site.

Suitable Qualified Ecologist

Arzu Nuhoğlu as a suitable qualified ecologist has undertaken the BREEAM In Use ecology assessment. She holds bachelor and master degrees of landscape architecture (Appendix 1). She has been a practicing landscape architect for about twenty years with reputable projects and reliable consultancy services addition to her specialty and experience in the field of ecology (Appendix 2).

Therefore, she meets the qualification of suitable qualified ecologist for BREEAM ecology assessment.

General Information

Afyonkarahisar is located as a gateway between the Aegean sea and inner regions of Anatolia, locating at the crossroads of three different regions of Turkey. Afyon is bordered with Konya to the east, Usak to the west, Kutahya to the northwest, Denizli to the southwest, Burdur to the south, Isparta to the southeast, and Eskisehir to the north. Total area of Afyon is 14.570 square km and its elevation is 1.034 meters. The city has a continental climate; hot and dry summers, mild and rainy springs, cold and snowy winters.

The history of Afyon dates back to 3000 BC. It was home to Hittites, Phrygians, Lydians, Persians, Greeks, Romans, Byzantines, Seljuks and Ottomans. The city is famous for its specific "Turkish Delight" and "Kaymak" (a kind of hard cream put on desserts), its "Sucuk" (special spicy sausages), its Opium fields (under strict supervision by the Government), its marble quarries, and for its various thermal baths.

Afyonkarahisar Chamber of Commerce and Industry (has been continuing its activities within the frame of role and responsibilities set for chambers with the frame of the law 5174. Afyonkarahisar CCI, besides helping to improve commercial and industrial activities in the region of Afyonkarahisar it provides services to prepare capacity reports, foreign trade documents, member registration and business documents for import and export reports and also conducts within commercial registration process.

Afyonkarahisar Chamber of Commerce and Industry has been providing services with

16 staff to 27 professional committees and 157 committee members and 63 assembly members, 4590 active members and totally 5786 members.

In 2005, Accreditation Committee composed by Turkish Union of Chambers and Commodity Exchanges within the adaptation to EU Chambers' system programme, our chamber had been certified as an "Accredited Chamber". Also, certified by the Turkish Standards Institute that our chamber satisfies the standards regarding "Quality Administration System" of TS EN ISO 9001 /2000 and TS ISO 10002 Customer Satisfaction Management System.

Analyzing Immediate Surroundings

Afyonkarahisar CCI Building is located along the main vehicular road which is both an intersection of the routes from Ankara to İzmir and from İstanbul to Antalya and a popular stopping-place. The building is located as a neighbor to the significant shopping centers, thermal hotels, university campus and trade plazas.

Afyonkarahisar CCI Building was located in the city center from 1981 to 2014. Former building was rebuilt as a trade center under the urban transformation regulations. Afterwards, The building moved from city center to west suburbans of the city along the Ankara-İzmir Highway. Thus, this is one of the most preferred tourism route in Turkey, the building is close to many thermal tourism hotels, shopping centers and stopover places (See Figure 1).



Figure 1. Location map

Afyonkarahisar CCI Building is located 8.7km close to Afyonkarahisar city center. Economy of Afyonkarahisar is based on marble quarries, thermal tourism, stopover places and agriculture. Significant spots of these trade branches are close to the building, which is a gain for Afyonkarahisar CCI to have strong relationship to local traders.

Plus, Afyonkarahisar CCI has an active role in the socio cultural event and development of the Afyonkarahisar city. The location of the building is also helpful to communicate citizens, easily. Afyonkarahisar CCI Building is close to many sociocultural, educational, administrative and sports' places such as Afyon Kocatepe University, Afyonkarahisar Sports Complex, Kocatepe Hospital and Provincial Directorate of Disaster Emergency Search and Rescue Association. See Figure-2 to see the site in a closer scale.



Figure 2. Pattern of the surroundings

Design features

Afyonkarahisar CCI Building was built between 2011 and 2013 and opened in 2014 as a service building. This four storey building has a rectangular shape with diagonal eaves which welcomes people with glass façades.

Vegetated areas are combined of designed and non-designed green spaces. In the entrance area and around car-parks; well-maintained green islands and trees exist. At the back and sides of the building, greenery is naturally grown and mostly combined of shrubs. Additionally, Afyonkarahisar CCI planted new trees in line with the site boundary.

Despite the building is located near the Ankara-İzmir Highway, the structure of the surroundings are mostly green spaces. Green stripes separate highway and the building.



Figure 3. General view of ATSO



Figure 4. Night view of ATSO

Planted areas

Afyonkarahisar CCI Building was built on approximately 29532 square meters (area of the site boundary). The area of the building's ground floor is approximately 1306 square meters. A transformer building (84 square meters), and an additional building which has 5156 square meters floor space (is used as storage area; real estate investment to be developed in future) are exist on the site. Total floor space on the site is 6546 square meters.

The landscape area of the center (both hardscape and softscape) is 19040 square meters. The area of roadways and car parks are not included in the landscape area calculation.

The green area of the ground floor is approximately 17952 square meters.



The ratio of vegetated area to site area is approximately %60.8 (see Figure -5).

Figure 5. Ground floor green areas

Indoor plants with ecological benefits exist inside of the building as a decorative element (see Appendix 3d).

In Afyonkarahisar CCI, vegetated areas are combined of large greenery at the back of the building, planting around the entrance area, indoor planting, green stripes and solitaire trees around car parks,

Ecology Report

Ecology report includes analyses of the man-made landscape features in the building complex. Therefore, presence of fauna, convenience of plant species that are used

in the site and their contribution to urban ecology is assessed. Maintenance and biodiversity enhancement activities of Afyonkarahisar Chamber of Commerce and Industry Building are also assessed.

Habitat survey is carried out in May 2019, when the vegetation types that characterize a certain habitat are more readily identifiable, by Arzu Nuhoğlu as she is accepted a suitable qualified ecologist.

The location of the site is between highway and rural areas; suburbans of the city. The green structure is re-gained after highway construction. Green stripes along the highway helps damaged natural flora to become green again.

Despite negative conditions due to be near the highway, most of the site is green at the back of the building.

The green areas can be seen in the Figure-5 and also see the Appendix-3a and 3b for the general green structure of the area.

Main vegetated and well-maintained areas are located in the Entrance zone. The planted areas have viable sizes to support flora and fauna within them and have potential to increase the biodiversity.

Plus, around car park area, trees and green islands exist to contribute flora and fauna and reduce massive hardscape effect and overheating, by working as shading elements.

Afyonkarahisar CCI Building has indoor green materials which are regularly and individually maintained. Indoor plants help to improve indoor quality by filtering the noise of the environment, providing acoustic control, oxygen production and etc. Indoor plants carry the natural feeling to indoor spaces. Green texture and number of planters are suitable. See indoor plant species in Appendix 3d and 4.

The green structure is aimed to create qualified areas for users. The plant list and contribution to wildlife can be seen in the Appendix-4 in detail.

Additional survey is carried out in order to provide more information, particularly on vegetation of the site. The green structure is mainly suitable for the site climate and drought tolerant. Most of the species that planted in Afyonkarahisar CCI attracts bees, birds and butterflies and some of them are edible. Existence of bird, butterfly and bee attracting flora is also have a positive contribution on biodiversity. Plus, approximately %53 of the plant species is native.

<u>Maintenance</u>

Adana Optimum is responsible for management of landscape areas and authorized "Habib Öztoprak" for maintenance. Policies they adopt to improve the ecological features on the building are,

- maintaining the vegetation alive and healthy,
- applying natural fertilizer on sward areas,
- replacement of damaged trees and flowers,
- observing the effects of external factors on vegetation,
- irrigation system maintenance and repair,

- convenience of all the agricultural pesticides and fertilizers applied on site are to be checked according to Ministry of Agriculture's norms and certification system.

While visiting the site, most of the plants were healthy and well maintained. There is a plan in place to maintain and improve the ecological value of the asset. See Appendix-5 for the annual maintenance programme.

Ecology/Biodiversity Enhancement

Afyonkarahisar CCI aims to have a pioneer building with its eco-friendly technology.

It is an example for public institutions and professional organizations in the use of solar energy for electricity and geothermal energy for heating. Afyonkarahisar CCI expect to raise awareness about preferring renewable energy resources in the region.

In addition to using renewable resources, reducing negative impacts on the environment, providing diversity in energy use, establishing modern and innovative infrastructures as well as ensuring the achievement of the 'Sustainable Environment' target in the 10th Development Plan of Afyonkarahisar CCI.

On the other hand, Afyonkarahisar CCI is one of the first institution in Afyonkarahisar that carries out "Zero Waste Project" of the Turkish Government in the building. Staff were trained quickly and waste sorting containers were placed on the 2nd and 3rd floors where pedestrian flow is heavy. The waste is collected at the solid waste collection center at the back of the building. Afyonkarahisar CCI notifies the Provincial Directorate of Environment and Urbanization quarterly on this subject.

Plus, Afyonkarahisar CCI is a corporate member of TEMA (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats) since 2018.

Moreover, improvement suggestions listed below was implemented after qualified ecologist's site visit.

Improvement Suggestions

Flora

1. Number of trees – especially evergreen- are increased. Trees provide shade in sunny season and creates wind barrier in winter (see new trees in Appendix 3c).

Fauna

- 2. Installation of bird boxes would contribute to fauna diversity in the ground floor (see bird boxes in Appendix 3c).
- 3. Invertebrate biodiversity can be encouraged by maximizing structural diversity, varying the soil depth, using native substrates, and growing plant specifies that serve as larval hosts and food plants for insects.
- 4. Chemical materials and pesticides would not be used against pests. The natural hunters of these harmful insects should be invited to the field and allow to be resolved in their own cycle of nature.
- 5. Installation of a water feature/box would be useful for insects, bees and birds (see water boxes in Appendix 3c).

Soil enhancement

6. Remnants remain over periodic maintenance, could be used for mulching. Due to containing high amount of carbon mineral, preventing organic waste to burn in solid waste disposal facility will contribute to reduce carbon emission thus, heat island effect in urbanscapes. And the garden would get benefit of the organic material. Redundant remnants are to be collected and then oriented to the organic waste treatment plants.

Biodiversity Action Plan

The aim of the BAP is to set additional criteria to sustain the current situation's advantages and to give improvement suggestions specific to the project site.

Sustaining by maintenance

Good drainage, a necessity in planted areas, prevents a backup of water in planting beds. However, the more water applied in bed, the greater leaching of soil nutrients will be. Moisture sensors that signal dryness can also indicate when the soil has enough water, to prevent overwatering.

Introducing earthworms into the planting mix would greatly enhance soil structure and fertility. Their burrowing at various levels aerates the soil and permits water to enter the growing strata. Most important, however, their castings contain nitrogen in form readily taken up by plants.

Monitoring of plants and soils for potential irrigation and fertilizer needs.

Root pruning is need to be done in the late fall before the tree goes dormant. It is particularly needed for trees growing in small raised bed. Cuts are made 60-90cm inside the walls, to the depth of the bed. To balance the loss of fine roots, the upper branches of the tree are pruned at the same time.

A top dressing of mulch is an important component of any planting area. Mulch helps to prevent the growth of weeds, to retain soil moisture by reducing evaporation, and moderate soil temperature. Replenishing mulch in a roof garden is a necessary part of its maintenance due to the soil dries out rapidly virtue of subsoil abundance to draw water from.

Vegetation need to be observed periodically, and on behalf of the corrupted plants native species and the species that contribute to wildlife (See Appendix 4: Planting List and Contribution to Wildlife) are to be given priority for replacement.

The responsible organization need to employ at least one staff to observe the plant groups and to make providence before they are destroyed.

Additionally, see National Biodiversity and Strategy Action Plan (NBSAB)'s Goals and Objectives below to sustain and improve ecology and biodiversity.

National Biodiversity and Strategy Action Plan (NBSAB)'s Goals and Objectives

GOAL	OBJECTIVE
1. To identify, protect and monitor biological diversity components which have importance for Turkey	 1.1. In order to determine and monitor any changes in ecosystems, species and genetic diversity, to develop and implement biological diversity inventory and monitoring methods and programmes, by considering rapid assessment methods and biological diversity indicators, as well 1.2. To include the less-represented ecosystems, species and genetic diversity centres into protected areas of both terrestrial and aquatic ecosystems, and to achieve an effective protected area management 1.3. To prevent or minimize as far as possible any pressures on and threats to biological diversity
2. To use biological diversity components in a sustainable manner by applying the methods and at a level fitting to their renewal capacity by taking the future generations' needs into account	 2.1. To establish harmony among legal, administrative and institutional regulations and applications having relevance to the conservation of biological diversity and sustainable use of its components 2.2. To develop and put into practice the ecosystem-based planning and management systems for the purposes of the biological diversity conservation and the sustainable use of biological resources 2.3. To raise public awareness and sensitivity concerning the conservation and sustainable use of biological diversity
3. To identify, protect and benefit the components of genetic diversity, including the traditional knowledge, which have importance for Turkey	 3.1 To identify, record, protect and manage the components of genetic diversity which have importance in terms of biological diversity, agriculture, food and economic value 3.2 To control access to genetic resources and guarantee the sharing of the benefits arising out of the utilization of these resources with Turkey
4. To identify, protect and monitor the components of biological diversity which have importance for agricultural biological diversity; to protect genetic resources which have actual and potential values for food and agriculture, and to ensure the sustainable use of such resources; and to ensure the fair and equitable sharing of the benefits arising out of the utilization of genetic resources	 4.1 To identify, protect and monitor the biological diversity elements which have importance for agricultural biological diversity 4.2 To develop management applications and technologies as well as policies which support the positive impacts of agriculture on biological diversity, on one hand, and minimize its adverse impacts, on the other hand, and to increase yield from agricultural ecosystems and its capability to sustain as a source of livelihood 4.3. To prevent or minimize as far as possible any pressures on and threats to agricultural biological diversity which come from the genetically modified organisms (GMO's) and the alien species 4.4. To ensure conservation and sustainable use of genetic resources which have actual and potential values for food and agriculture; and to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources

5. To protect steppe biological diversity, to ensure the sustainable use of its components, as well as to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources; and to combat against the loss of steppe biological diversity and the socio- economic results of that}	 5.1. To fill the information gaps concerning steppe biological diversity 5.2. To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, flood, fires, tourism, agricultural transformation or abandonment which have adverse impacts on the biological diversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the above 5.3. To establish mechanisms and frameworks in order to support the fair and equitable sharing of the benefits from the utilization of the genetic resources of steppe areas
6. To establish an effective monitoring, management and coordination system for the conservation of forest biological diversity and the sustainable use of its components	 6.1. To develop and put into practice the monitoring programmes for better evaluation of the status and tendency of forest biological diversity 6.2. To establish appropriate mechanisms for more effective conservation and sustainable use of forest biological diversity
7. To establish an effective monitoring, management and coordination system for the conservation and sustainable use of mountain biological diversity, together with its different ecosystems, pursuing a holistic approach	 7.1. To effectively implement biological and ecological inventories, monitoring programmes and classification systems 7.2. To establish appropriate mechanisms for the conservation and sustainable use of sensitive mountain ecosystems
8. To develop and implement effective methods for the conservation of inland waters biological diversity, the maintenance of ecological functions of inland waters ecosystems, and the sustainable use of these ecosystems	 8.1. To strength technical and institutional capacity for the conservation and sustainable use of inland waters biological diversity 8.2. To take actions for the conservation and sustainability of inland waters biological diversity and reduce threats to it
9. To develop and implement effective methods for the conservation of coastal and marine biological diversity, the maintenance of ecological functions provided by coastal and marine ecosystems, and the sustainable use of these ecosystems	 9.1. To strengthen necessary administrative, legal, institutional and technical capacity for the identification, monitoring, conservation and sustainable use of coastal and marine biological diversity 9.2. To fill the information gaps concerning coastal and marine biological diversity, to identify and put under conservation the areas and species which have importance for biological diversity and are under threat, and to develop and implement monitoring programmes 9.3. To combat against the threats to coastal and marine biological diversity
10. To establish a mechanism for the implementation of the Biological Diversity Strategy and Action Plan and the follow-up of implementation and reporting	 10.1. To establish coordination among the relevant institutions as regards the conservation and sustainable use of biological diversity 10.2. To achieve the integrity and sustainability of financial structure for the identification, conservation and sustainable use of biological diversity

References

Akkemik, Ü. (Ed.),2018, Türkiye'nin Doğal-Egzotik Ağaç ve Çalıları, Orman Genel Müdürlüğü Yayınları, Ankara.

Hough, M., 1995, Cities and Natural Process, Routledge, New York. Osmundson T., 1999, Roof Gardens History, Design and Construction, WW Norton & Company, N.

Brenneisen, S., The Natural Roof (NADA)- Research Project Report on the Use of Extensive Green Roofs by Wild Bees, 2005, University of Wädenswil.

Hough, M., 1995, Cities and Natural Process, Routledge, New York.

Scholz-Barth, K. & Weiler, S., 2009, Green Roof Systems. John Wiley & Sons, Inc., New Jersey.

TC Republic, Ministry of Environment and Forestry, The National Biological Diversity Strategy and Action Plan, 2007.

17.june.2019

http://www.afyonkarahisartso.org.tr/eng/index.asp	17.june.2019
---	--------------

http://www.allaboutturkey.com/afyon.htm

http://www.kocatepegazetesi.com/tr-tr/haberler/109367/serteser-uyum-olmadansehrin-gelisimi-dusunulemez 17.june.2019

https://www.afyonyerelbasin.com/atso-ornek-bir-projeye-daha-imza-atti-30324.html 17.june.2019

https://www.afyonturkeligazetesi.com/index.php?sf=haberOku&haber_id=9193 17.june.2019

https://www.afyonturkeligazetesi.com/index.php?sf=haberOku&haber_id=8199 17.june.2019

https://www.afyonyerelbasin.com/atso-cevreci-projesi-ile-odul-aldi-49090.html 17.june.2019

APPENDICES

APPENDIX 1: ECOLOGIST'S DIPLOMA

	Fen Bilimleri Enstitüsü Vüksek Lisans Diptomasi	Lisans Ölstü Öğtetim yönetmeliği'nin bütün hükümletini yerine getiterek PEYZAJ MIMARLIĞI ANBILIM DALINDAN başarılı olmuş ve	ZIRAAT YÜKSEK MÜHENDISI	Aula la la bie No. : 530 Tarih :1312.1990 Neulus regumerature regumerature regumerature regumerature regumerature regumerature regulation of the regulation	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
6 6 0 0					C C DV

APPENDIX 2: FIRM PROFILE



ARZU NUHOGLU LANDSCAPE DESIGN FIRM PROFILE

Firm name:	Arzu Nuhoğlu Landscape Design
Founder:	Arzu Kutkam Nuhoğlu
Foundation Year:	1999
Scope:	Landscape Architecture, Urban Design, Landscape Ecology,
	Engineering, Project Management and Consultancy
Employers:	Belma Şahiner (Landscape Architect), Balin Koyunoğlu (Ms. in
	Landscape Architecture), Başak Damla Bilgiç (Ms. in Landscape
	Architecture and Urban Design), Rengin Haksal Akkaya
	(Landscape Architect), Hande Kalender (Architect, Landscape
	Architect)
Contact Information:	Arzu Nuhoğlu Peyzaj Tasarım
	Yoğurtçu Zülfü Sok. No:6 PK:34342
	Bebek, Beşiktaş/ İstanbul/ TURKEY
	+90 212 265 37 70
	www.peyzajtasarim.com

GREEN CERTIFICATE PROJECTS: BREEAM

Piri Reis University Marine Faculty, Breeam International, 2008 Küçükcekmece Municipality Service Building, Breeam International, 2010 Redevco Magnesia Mall, Breeam Europe Commercial, 2011 Kanyon Mall and Office Block, Breeam in use, 2012 Marmara Park Shopping Mall, Breeam in use, 2013 EsPark Shopping Mall, Breeam in use, 2013 Forum Adana, Breeam in use, 2013 Forum Mersin, Breeam in use, 2016 Friterm Factory Building, Breeam International, 2016 Schneider Factory Building, Breeam in use, 2017 Sariyer Municipality Services Building, Breeam International, 2017 Gaziantep Metropolitan Municipality Building, Breeam in use, 2018 Akmerkez Mall and Office Block, Breeam in use, 2018 LEED Palladium Tower PD Antep Mall Sabiha Gökçen Airport Technical Building

Narlife

APPENDIX 3a: GREEN STRUCTURE | Entrance and carparks



APPENDIX 3b: GREEN STRUCTURE | Backyard and surroundings



APPENDIX 3c: GREEN STRUCTURE | New planted trees and Bird boxes



APPENDIX 3d: GREEN STRUCTURE | Indoor plants



APPENDIX 4: PLANTING LIST AND CONTRIBUTION TO WILDLIFE

BOTANICAL NAME	NATIVE	ADVANTAGE
OUTDOOR AREAS		
TREES		
Acer palmatum		adapts to all types of soil, attractive appearance
Amygdalus communis	~	edible, drought tolerant
Cedrus libani	~	coniferous evergreen, drought tolerant, freeze tolerant
Cupressocyparis leylandii		well adapted to Turkey conditions, coniferous evergreen, adapts all types of soil, suitable for topiary
Ligustrum vulgare	~	attracts birds and butterflies, drought resistant
Pinus brutia	~	coniferous evergreen, drought tolerant, heat tolerant
Pinus nigra	~	coniferous evergreen, wind resistant, drought tolerant
Prunus armeniaca		well adapted to Turkey conditions, edible, drought tolerant
Prunus cerasifera pissardii 'Nigra'		well adapted to Turkey conditions, attracts birds and butterflies
Robinia pseudoacacia		well adapted to Turkey conditions,enriches the soil by means of its nitrogen-fixing nodules,bird nest for woodpeckers, seeds are also eaten by bobwhite quail and other game birds and squirrels
Salix sn	~	ornamental food plants by the larvae of some Lepidontera species
Thuia occidentalis 'Smargard'		well adapted to Turkey conditions, coniferous evergreen, food plants by the larvae of some Lepidoptera species, suitable for topiary
SHRUBS		
Berberis thupberghii 'atropurpurea'		well adapted to Turkey conditions, attracts hirds, past for fauna, adapts to all types of soil
Buxus sempervirens	~	evergreen, shade tolerant, adapts all types of soil, suitable for toniary, attracts birds and bees
Bosa sp	1	attracts birds and butterflies staring flowers
INDOOR AREAS		
Anthurinum andreanum		evergreen, air purifier
Coleus sp.		evergreen, decorative structure
Diffenbahia sp.		evergreen, air purifier
Draceana marginata		evergreen, air purifier, increase humidity of indoor air
Draceana massengea		evergreen, air purifier, increase humidity of indoor air
Ficus benjamina		evergreen, air purifier, increase humidity of indoor air
Ficus elastica		evergreen, air purifier
Hedera helix	~	attractive for bees and pollinating insects, medicinal plant
Kalanchoe sp.		evergreen, decorative structure, food plant of the caterpillars of Red Pierrot butterfly
Schefflera arboricola		evergreen, tolerance of neglect and poor growing conditions
Phanelopsis sp.		decorative structure, air purifier
Viola odorata		decorative structure, fragrant
Yucca massengena		evergreen,drought tolerant, air purifier

	January	February	March	April	May	June	ylul	August	September	October	November	December	notes
Irrigation				×	×	×	×	×	×	×			regularly in dry season
Mowing				×	×	×	×	×	×				twice a month
Weed control	×	×	×	×	×	×	×	×	×	×	×	×	regularly
Fertilizing					×								once a year
Pruning				×	×								
Insect and pest control			×				×				×		3 times a year
Planting seasonal flowers				×						×			
Indoor plants care	×	×	X	×	×	×	×	×	×	x	×	×	regularly

APPENDIX 5: ANNUAL MAINTENANCE PROGRAMME