

# THE KERKENES ECO-CENTER PROJECT

## A REPORT ON THE 2017 RESEARCH AND ACTIVITIES

by

The Kerkenes Eco-Center Project Team  
*Middle East Technical University, Ankara*

December 2017



*Figure 1. METU students preparing soil to make mudbrick during the Hands on session at Kerkenes in April 2017. (17kekc0406)*

## LOCATION

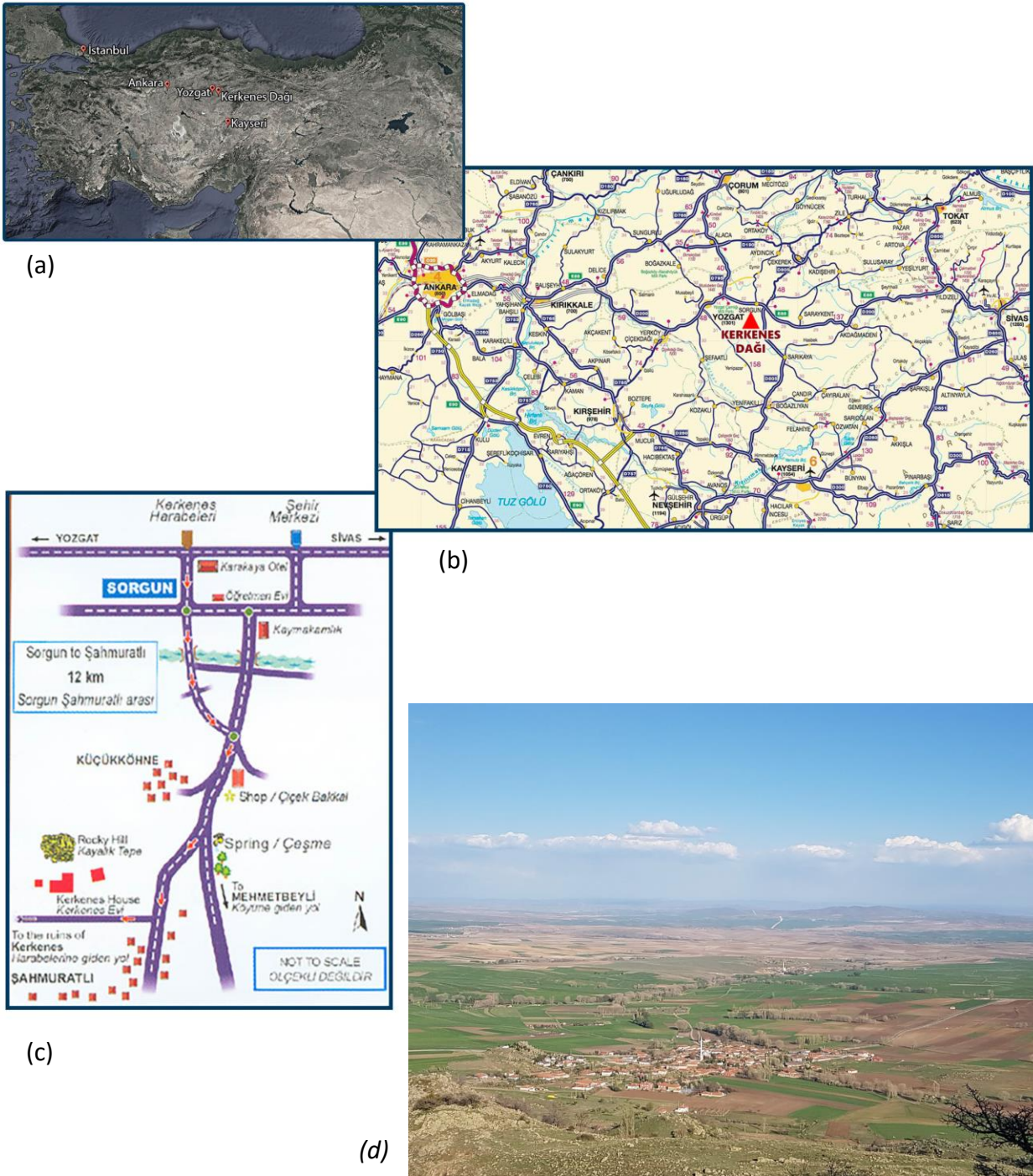
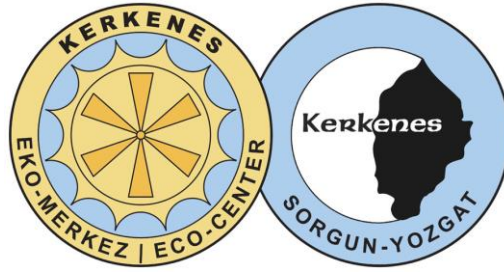


Figure 2. (a) Map of Turkey showing the location of Kerkenes on the northern edge of the Cappadocian Plain.  
(b) Road map of Central Anatolia showing location of Kerkenes Dağ, the nearby town of Sorgun and provincial capital of Yozgat.  
(c) Directions to the village of Şahmuratlı.  
(d) The Village of Şahmuratlı overlooked by the ancient city. (17kekc0420)

## CONTACTS



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<http://kerkenes.metu.edu.tr>

The Kerkenes web page opens up three homepages, K-Eco, the most recent one, is dedicated to the Kerkenes Eco-Center and Environmental Studies.



<http://www.kerkenes.metu.edu.tr/keco/index.html>

The Kerkenes Eco-Center web page reports on activities and annual programs.

**Facebook**

<https://www.facebook.com/KerkenesEcoCenter>



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*Figure 3. The rehabilitated Şahmuratlı village school, now known as the Kerkenes Training Center, hosts the Hands-on educational programs. (17kek0410)*

## INTRODUCTION

Since 2002, the Kerkenes Eco-Center hosts research and activities focused on sustainable practices to reduce energy consumption and improve village life for a sustainable future. The aim is to promote the use of renewable energy, appropriate building materials with low embodied energies and minimal CO<sub>2</sub> emission. The Kerkenes Eco-center has been a center of innovation and research giving opportunities to local villagers, school children, architecture students and instructors from the Middle East Technical University (METU) to work together. Most of the research and experimental buildings are the fruit of close collaboration between team members and stakeholders as well as the support of several partners interested in archaeology, ecological architecture, environmental design research or the development of rural areas.

### Mission

The purpose of the Kerkenes Eco-Center is to promote sustainability through environmental studies. It pursues the following objectives:

- To advocate the use of renewable sources of energy;
- To act as a stimulus and a catalyst for environment-friendly building with appropriate materials and energy efficient designs;
- To act as a dynamic experimental base for testing designs, materials and activities suitable for viable and sustainable village life.
- To support the income creating activities for rural development, in order to stop and reverse the migration from rural to urban areas.

## The 2017 Activities

In 2017, activities at the Kerkenes Eco-Center took place during the spring and summer months when groups of students came to Kerkenes for a Hands on Building program led by Matthieu Pedergrana. Facilities include the village school now rehabilitated and called the Kerkenes Training Center. In April the Eco-Center hosted METU students participating in Hands-on sessions for the *Architecture in situ* course, Arch 326. These students were hosted for a 3 day program that included visits to the nearby archaeological site, the Iron Age ancient city on the Kerkenes Dag. In July students from the Konya Karatay University took part in a workshop at the end of which they were given a certificate. Accommodation and meals were provided in the newly rehabilitated school with the assistance of the local women from the village.

Ongoing research and educational activities on environmental design to maximize energy efficiency, appropriate building materials and techniques were funded by a METU BAP grant and generous donations from corporate sponsors.

Before their trip to Kerkenes, METU students enrolled in the Arch 326 course were given an introduction on the Eco-Center's past activities, its status, mission and also the ongoing archaeological research in the ancient city on the Kerkenes Dağı which they visited (Figs 4 and 5). As part of the Hands-on program, they spent time working with local building materials and experimenting with design alternatives. Matthieu Pedergrana gave a presentation about earth and mud architecture to conclude the course.



*Figure 4. METU students visiting the ancient city on the Kerkenes Dağ. (17kekc0424)*



*Figure 5. METU Students and Şahmuratlı Village, from Kerkenes Dağı (17kekc0421)*

During Hands-on sessions at the Kerkenes Eco-Center, METU students took part in building and research activities focusing on environmental design and energy efficiency. They visited all the experimental buildings that have been monitored to compare their environmental behavior (Figs 6 and 7). They experimented mainly with earth architecture considered to be an appropriate building material due to its low embodied energy, low CO<sub>2</sub> emission and availability. To students were taught how to prepare the mixtures and worked in groups on the design and building of small features (Fig. 8). In the dormitories they built rammed earth partition walls with niches to be used as shelves (Figs 9 and 10). Standing slip-straw partition walls were plastered with mud (Fig. 11). The students have also learnt to produce traditional mudbricks and pressed bricks to be used in the Eco-Center (Figs 12, 13 and 14).



*Figure 6. METU students visiting the Kerkenes Strawbale House in Sahmuratli Village. (17kekc0102)*



*Figure 7. METU Students in front of the Kerkenes Solar House. (17kekc0103)*



*Figure 8. Students preparing mudbricks. (17kekc0116)*



*Figure 9. Students learning how to make a rammed earth wall. (17kekc0240)*



*Figure 10. Rammed earth wall with a niche designed and built by METU students. (17kekc0247)*



*Figure 11. Mud plaster being applied on the existing slip-straw partition wall (17kekc0214)*



*Figure 12. Soil mixture being placed into manual compressor for pressed bricks (17kekc0206)*



*Figure 13. Pressed bricks left aside for drying. (17kekc0207)*



*Figure 14. METU students filling mud into the mudbrick mold. (17kekc0105)*



The students from Konya stayed in the Eco-Center and worked on small design projects to improve the amenities. In one of the dormitories, they raised the rammed earth wall and added another niche (Fig. 15). In the other dormitory, students used the mudbricks that were produced in previous hands-on sessions to build another partition wall and decorated it with glass bottles (Figs 16). They built some additional partition walls made of slip-straw in the dormitory (Fig. 17). Another group of students designed and built a bench made of cob (Figs 18 and 19). Finally students prepared posters for the jury (Fig. 20). At the end of the workshop all students receive a certificate.



*Figure 15. KTO-KÜ students heightened the existing rammed earth wall and lined the niche with bricks. (17kekc0815)*



*Figure 16. KTO-KÜ students making a partition wall with mudbricks in the dormitory. (17kekc0709)*



*Figure 17. KTO University students built a new slip-straw partition wall in the dormitory. (17kekc0824)*



*Figure 18. Experimental design of bench made of cob. (17kekc0707)*



*Figure 19. The cob bench designed and built by one of the group of students. (17kekc0813)*



*Figure 20. KTO-KÜ students preparing posters to illustrate the work done. (17kekc0805)*

### **Activities of the Kerkenes Project Team**

The Kerkenes Project Team from METU made several visits to the Kerkenes Eco-Center and helped with necessary repair and maintenance. In the Kerkenes Training Center villagers use the solar space to dry fruit and vegetables (Fig. 21). Solar cookers have been used to make wild plum jam, a village specialty (Fig. 22).



*Figure 21. Solar space is used by villagers to dry vegetables and fruits. (17kekc0919)*



*Figure 22. Solar cooker used to prepare wild plum jam. (17kekc1007)*



*Figure 23. A solar cooker being repaired by the Kerkenes Project Team. (17kekc1004)*

## The 2017 Bozok Symposium

In May 2017, a paper on the Kerkenes Eco-Center and its Eco-Tourism Potential was presented at the Bozok Symposium (Figs 25 and 26). It presented an overview of the achievements of the project and its potential as an eco-tourism destination (Fig. 27). The paper submitted for publication is included in this report as an appendix.



Figure 25. The II International Bozok Symposium in Yozgat.



Figure 26. Exhibition of the historical heritage of Yozgat province. (17kekc0603)



Figure 27. Francoise Summers presenting a paper on Kerkenes Eco-Center at the Bozok Symposium in May 2017. (17kekc0619)

## PROPOSED PROGRAM OF ACTIVITIES FOR 2018

### Education and training

Hands-on Building workshops, day visits and activities to promote renewable energy and energy efficient design are amongst the events planned for the spring and summer 2018. The aim is to increase involvement with local schools and other educational establishments and arouse awareness in the region and beyond.

### Research

The project assistants and students from METU will continue to study the behavior and environmental performance of the experimental buildings and present the results at seminars and conferences.

## FUTURE PERSPECTIVES

The Kerkenes Eco-Center Project would not have been initiated if the remains of the Iron Age City on the Kerkenes Dağ had not been the focus of a major program of archaeological research bringing together teams of professionals, educators and students from many different disciplines. As it developed into a research and education center, the Kerkenes team from the METU Architecture Department pursued a program of studies on appropriate and natural building techniques.

Establishing a sustainable research and education center is the long term aim of the Kerkenes Eco-Center Project team. Research, education and arousing public awareness with an emphasis on sustainability has been the focus of the Kerkenes Eco-Center Project activities since it was founded in 2002. It is hoped that continuing support from local authorities and private sector will enable the project team to put in place a 2018 program of activities that will bring together villagers, school children, university students, educators and professionals for workshops and visits that will help securing a sustainable future for our planet (Fig. 28).



*Figure 28. Hands-on at the Kerkenes Training Center.*

## APPENDIX

### THE KERKENES ECO-CENTER AND ITS ECO-TOURISM POTENTIAL

*Françoise SUMMERS, Soofia Tahira Elias-Ozkan, Matthieu Pedergrana and Maryam Farzin*

A presentation given in May 2017 at the

### II. ULUSLARARASI BOZOK SEMPOZYUMU

### II. INTERNATIONAL BOZOK SYMPOSIUM

Tourism Potential of Yozgat and its Problems



THE KERKENES ECO-CENTER  
KERKENES EKOLOLIK MERKEZİ



### THE KERKENES ECO-CENTER AND ITS ECO-TOURISM POTENTIAL

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