Straw-Bale Buildings in Turkey
Straw-bale buildings in Turkey

Outline

Map of straw-bale buildings in Turkey

History of straw-bale buildings (1999 to 2015)
- First houses and eco-networks (Hassandede, Buğday demeği, Güneşköy, Kerkenes Eco-center)
- Ecological building workshops (Yeniköy Farm) and development of awareness
- Self builders and self education
- Professionalisation and common work

Specific features for straw-bales in Turkey
- Climatic zones
- Seismic area
- Social conditions and points of view

Case study
- Buğday warehouse
- Kerkenes stone warehouse
- Nazim house
- House in Datça
- Straw-bale solar passive house

Natural building network, needs, proposal and possible achievements
Straw-bale buildings in Turkey

Straw-bale buildings on the map
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

First building = empty buildings

Built by NGO as demonstration buildings

Create and awareness and testing methods/comfort

Around Ankara and Istanbul
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Güneşköy
Hasandede
Kerkenes
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Hasandede and Hocamköy:

1st eco-village experiment in Turkey
1st straw-bale house as an experiment in 1999-2000 (architects and academicians + foreign specialist)
1st community supported agriculture trial and village association office
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Kerkenes Eco-center

1st Eco-center in Turkey (2002)
Straw-bale greenhouse and straw-bale house (2002 and 2003) built by villagers + foreign specialist
Innovative stone warehouse with straw-bale insulation (2008)
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Güneşköy:

Eco-village and community supported agriculture
Round shape straw-bale warehouse
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Buğday association
History of straw-bale buildings (1999 to 2015)

First Houses and Eco-networks

Buğday association:

Straw-bale warehouse (workshop + foreign specialist) during the summer 2006
History of straw-bale buildings (1999 to 2015)

Self-builders and Self-education

- First buildings built by people following books (in foreign language)
- Large part of experimentation
- Awareness about low cost and energy efficiency
History of straw-bale buildings (1999 to 2015)

Self-builders and Self-education

Load bearing house near Konya (central Turkey)

2 storey house near Afyon (central Turkey)
History of straw-bale buildings (1999 to 2015)

Natural Building Workshop

1st Workshop in 2011 in Yeniköy farm and every year since
(straw-bale, earthbag, cob, mud-bricks, slip-straw, plasters…)

2015 - 5 or 6 workshops in different places of Turkey

At least 4 or 5 houses build by participants of the workshops
History of straw-bale buildings (1999 to 2015)

Natural Building Workshop

First straw-bale house in Yeniköy

2nd straw-bale house in Yeniköy
History of straw-bale buildings (1999 to 2015)

Professionalisation and Volunteering

Creation of the first straw-bale building company

Architect or specialist for design

+ Foundation and carpentry work through local workers

+ Volunteer and community work for walls and plasters

Full volunteer job
History of straw-bale buildings (1999 to 2015)

Professionalisation and Volunteering

First prefabricated house (Aydin, Ege region)

House fully made by volunteers (Istanbul)
Specific features for Turkey

To „understand“ Turkey

Not only a sunny and hot country (Ankara this winter, 2 weeks at -15°C + snow in May)

Regular earthquake – one of the most exposed regions of the world and traumaism of the 1997 Kocaeli earthquake

Non-acceptance of „natural“ building material
Specific features for Turkey

Climatic zones
Specific features for Turkey

Climatic zones
Specific features for Turkey

Sesimic area

Specific features for Turkey

Social conditions and point of view

Poor and rural life = live in tradition + seek for modernity

City educated middle class (secular and mostly from West Turkey)

= Out of the cities, close to nature, help villagers…

Generally non concerned by ecology or energy efficiency
Specific features for Turkey

Social conditions and point of view

„we are going on the moon and you play with mud like a kid“ (you stupid foreigner that is lucky enough to do a PhD in the best university of Turkey)

„Cows will eat your building!“

„My neighbour will burn it down!“
Case study

Diversity of construction in Turkey

1. Buğday association building near Istanbul

2. Kerkenes Stone Warehouse (Central Anatolia)

3. Prefabricated house near Aydin

4. Catener vault house near Bodrum

5. Two-family solar passive house near Çanakkale
Straw-bale buildings in Turkey

Case study on the map
Case study

Buğday association building

Construction: 2006

Location: Istanbul

Size: +/- 100 m²

Usage: Educational building for small conference and workshop

 Builders: Foreign architect and builder + turkish students + volunteer

Special features: conventional load bearing building (first in Turkey)
Case study

Buğday association building

Bottom plate on the foundation wall

Implementation of the ring beam assembly
Case study

Buğday association building

Walls under compression with straps

Building in ist finished state

All images from https://www.facebook.com/media/set/?set=a.10150133063955031.336447.281826545030&type=3
Case study

Kerkenes Stone Warehouse

Construction: 2008

Location: Yozgat (Central Anatolia)

Size: +/- 200 m²

Usage: Warehouse for preservation of stones from the nearby archeological excavations

Builders: Contractor for the structure and villagers for the walls and plasters

Special features: AAC post and RC beams
                Exterior lining with AAC
Case study

Kerkenes Stone Warehouse

Roof build before the walls

Building in ist finished state
Case study

Kerkenes Stone Warehouse

Ring-beam and moisture protection

5cm thick AAC as a external facing
Case study

Kerkenes Stone Warehouse

External facing ready to receive the insulation

Internal plastering with cement/lime plaster

All images and information from http://www.kerkenes.metu.edu.tr/keco/index.html
Case study

Nazim House

**Construction:** 2014

**Location:** Aydın (Aegean sea region - inland)

**Size:** +/- 150 m²

**Usage:** 3 rooms guest-house

**Builders:** Contractor for the prefabricated structure and plaster, architect for the design

**Special features:** prefabricated wooden structure + straw roof insulation
Case study

Nazim house

Panels on the site

Wall construction with man power sized panels
Case study

Nazim house

Rafter ready to receive the straw insulation

Loose straw between rafters
Case study

Nazim house

Finished house with earth plaster

Porch on the south facing side

All images and information from http://www.samanevim.com/
Case study

House in Datça

Construction: 2014

Location: Datça (Aegean sea region – south coast)

Size: +/- 2x60m²

Usage: house

Builders: Owner + volunteers

Special features: wooden structure with catenary arch shape + wooden cladding
Case study

House in Datça

Wooden platform on tyre foundations

Wooden arches ready to receive the bales
Case study

House in Datça

Exterior wooden cladding before installing the bales

Bales between the arches and implementation of 1st floor
Case study

House in Datça

Interior wooden cladding

Case study

Solar passive house

Construction: 2014

Location: Çanakkale (Marmara sea region - mountain)

Size: +/- 250 m² in 3 buildings

Usage: two family house

Builders: Architect + Owner + volunteers

Special features: post and beam structure with composite mud bricks and straw-bale walls + straw-bale roof
Case study

Solar passive house

Wooden frame and posts to receive the bales

Roof insulation and beginning of the central wing
Case study

Solar passive house

Interior bracing and plaster supporting system

Mud-brick south wall
Case study

Solar passive house

3 wings of the house under construction

State of the house after 1 winter

All images and information from the author
## Conclusions

- **27 straw-bale buildings in Turkey (at least)**
- Recent development (last 3 years) but no link between actors
- Problems due to poor knowledge of the construction
  (no documentation in Turkish, no Turkish straw-bale builders)
- Large demand for ecological buildings but mostly mud-brick or wooden building
  (traditional techniques) – Fear of the material and its behaviour
Straw-bale building network

Needs, proposal and possible achievements

Creation of a network:
- Internet website in Turkish + forum for help to builders
- Meeting and awareness of existing buildings
- Straw-bale registry

Diffusion of knowledge:
- Translation of books in Turkish
- Visit of existing buildings
- Organisation of technical workshop

Research and acceptance of straw-bale buildings:
- Examples of good practices
- Involvement of local authorities
Straw-bale building network

2015-2019 timeline

Improvement and translation of my website on straw-bale in Turkey + opening of a forum in Turkish and English (http://samanbalya.wordpress.com)

Organization of the first natural builder workshop in Ankara + Scientific conference on natural building material

Translation/adaptation of 1 book on straw-bale buildings
Thank you for your attention

More information

http://samanbalya.wordpress.com
(website on straw-bale construction in Turkey)

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