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## A Study on the Sustainable Architectural Characteristics of Traditional Anatolian Houses and Current Building Design Precepts

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### Abstract

Buildings and construction industry play an important role at local and global scale in utilization of natural sources, energy consumption and environmental problems. In this respect, the discipline of architecture has a prominent responsibility in achieving sustainability by constructing environmentally-friendly buildings.

In this study, traditional houses selected from different climate regions of Turkey, which is located in the middle of Asia and Europe, were examined in terms of settlement characteristics, planning scheme, form, facade characteristics and material use, attempting to determine whether there are precepts for architecture. Common sustainable architectural characteristics of traditional Anatolian houses were listed drawing attention to the fact that the obtained data should be considered as a precept in current building design.

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**Key words:** sustainability, sustainable architecture, traditional house, climate and house

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### 1. Introduction

In addition to rapid consumption and decrease of widely used fossil energy sources, increase of significant sustainability of sources in all fields (Çakamnuş et al., 2010). Similar to other fields, various gas emissions caused by

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construction, demolition and utilization activities depending on the use of fossil energy sources in construction industry have serious effects on the environment. Therefore, buildings should be designed in an environmentally-friendly manner as they are also responsible for the environment.

A review of the literature reveals that constructing environmentally-friendly buildings is not in fact difficult; in fact, our centuries old construction tradition is an example to this understanding. Examples of traditional architecture exemplify ecologic buildings formed by the experiences of layman within master-apprentice relationship through trial and error method throughout the time in light of “the best solution is found in nature” principle of ecology. Hasol (1998) defined traditional architecture, which is defined as vernacular architecture, as a sort of anonymous architecture in which people use local materials with traditional methods and forms. Başakman (1991), on the other hand, attributes the characteristics of traditional architecture which makes it “contemporary” and “permanent” to the fact that basic concepts such as reflection of lifestyle to space, rationality of material and structure and interpretation of building-environment relationships in entirety and this synthesis, which might be valid for any period, could be achieved in this architecture. These buildings are generally healthy buildings where human-nature relationship is solved in a simple and functional way. Traditional buildings are constructed with the most suitable local material and construction methods depending on their locations on the land, space organizations, zoning and orientation, climate and environmental conditions (Özmehmet, 2005).

Analysis of a traditional Turkish house shows that houses are built in such a way to be in harmony with local characteristics of their neighborhood and according to the solutions offered by that region at the formation and application stage. The buildings were formed in harmony with climatic conditions and environment of the region and energy consumption was minimized by effective use of natural energy sources. Consisting of regions with different climatic characteristics, traditional houses in Turkey have been varied according to those differences (Özek Karadeniz, 2010). Therefore, Traditional Anatolian Houses, which are examples of sustainable design understanding, should be analyzed and implications should be made for today’s sustainable design understanding.

In this context, primary aim of this study is to determine sustainable architectural characteristics of Traditional Anatolian Houses which are examples of current sustainable architecture understanding and to develop precepts from traditional architecture to current sustainable architecture understanding.

## 2. General Characteristics and Analyses of Traditional Houses in Different Climate Regions of Turkey

In this study, Turkey was divided into five regions with different climatic conditions including cold climate region, mild-humid climate region, mild-dry climate region, warm-humid climate region and warm-dry climate region (Figure 1) (Akşit, 2005). One province that best portrays the characteristics of those climate regions providing the highest visual data was selected for each climate region. Sustainable architectural characteristics of those provinces were analyzed over a determined house. Architectural characteristics of traditional houses in mild-humid and mild-dry climate regions were analyzed over the same province as their architectures show similar characteristics.

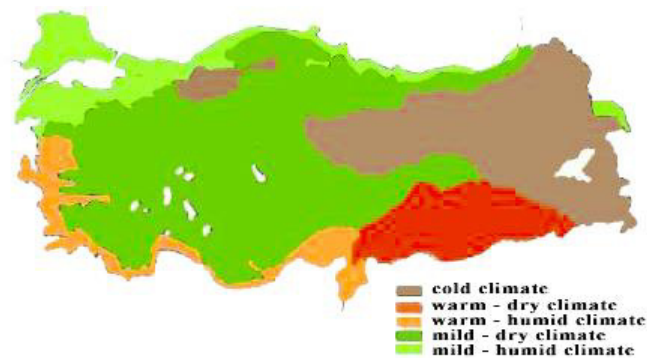


Figure1. Map of Climate Regions of Turkey (Koca, 2006)

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