



2nd International Conference on Advances on Clean Energy Research, ICACER 2017,  
7-9 April 2017 Berlin, Germany

## The Energy-Efficient Adaptation Scheme for Residential Buildings in Kazakhstan

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### Abstract

Green building is a system of interaction between climate, and the natural source has energy property, harmony with nature. Due to the cold climate of Kazakhstan, the issue of energy consumption of residential buildings is more important. Energy consumption of buildings in this region is more than half of the total. The system optimizes, must apply the theoretical analysis of research related to current problems.

More efficient use of the construction of residential buildings and reduce energy consumption. To expand and develop creative, original architectural design ideas, principles, and methods. Application of green technology in the territory of Kazakhstan in the first step can be carried out by passive energy conservation.

The results, theoretical model, adapt to green standards in Kazakhstan and planned development model. The adaptation of green technology is possible to represent framework. For a more detailed analysis and further research.

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Peer-review under responsibility of the scientific committee of the 2nd International Conference on Advances on Clean Energy Research.

*Keywords:* adaptation; green building; reduce energy consumption; strategy.

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## 1. Introduction

The motivation for the development of energy efficient and implementation of novel advanced materials applied in buildings can trace to increasing energy costs in conjunction with an enhanced environmental awareness among people. With the development of infrastructure, people spend in the building most of the time[1]. This paper is a modern adaptation of green building technology in Kazakhstan.

The research objective of the study is to provide a knowledge base that for architects, engineers when designing green buildings by and improving the internal environment of thermal comfort. The research identifies a detailed description of the standard drivers expected in new projects for residential buildings.

The strategy developed in the city of Astana, the field of green technologies, to promote energy-saving measures both in residential buildings. The purpose of this process was to demonstrate to implement energy-saving measures based on the transfer of knowledge between the various parties involved in the project the green building. For the case study, this process has been shown to be of great importance when the planned measures green building solutions technology combined with the expected new project in the future.

## 2. Literature review

The new definition could combine aspects of the technological, cultural, systems based on oriented strategies. Green building technologies could harness the power of new techniques and tools not only for optimization and minimization but also to promote social and cultural plans. The green building allows design, to be more architectural, toward specific strategies and processes that use an approach based on the place.

Y. Lu, S. Wang, Y. Zhao, C. Yan, Renewable energy system optimization of low/zero energy buildings using single-objective and multi-objective optimization methods, introduce the overall in carbon dioxide emissions, damage the environment and the indexes benefits [2].

Sinopoli, J. his paper How do smart buildings make building green? The article considers the smart green buildings that affect the surrounding environment reducing carbon dioxide emissions. Sustainable management of intellectual embodies technology; emphasize quality and comfort of life [3].

D. Kalyanmoy, Multi-Objective Optimization using Evolutionary Algorithms, introduce to find comparative possibilities for solving optimization is a continuous process. [4]

Chiu, M.L “Insights of Smart Environments.” The study concept of space interacts with the environment. The achievement made by the touch of the architectural plan, interdisciplinary integration and user comfort. Meeting the needs of the establishment is carried out responsive building there is a connection between the virtual space and the real environment [5].

D.A. Coley S. Schukat the article Low-energy design: combining computer-based optimization and human judgment Building and Environment, introduce heating and cooling system in public buildings [6].

P. Penna, A. Prada, F. Cappelletti, A. Gasparella, Multi-objectives optimization of Energy Efficiency Measures in existing buildings, the paper shows life-cycle cost of the building and energy consumption depending on the thermal discomfort for consumers[7]. Research of a housing improvement strategy based on architectural quality standards for the purpose of enhancing residential quality, health factors, and health preservation.

Archival research implementation and adaptation of green technologies focused interviews complemented by other countries, as well as reports received indicate which aspects of international experience have influenced the development of green technologies with a link to the local and regional conditions.

Even considering their character diagnosis, results of surveys conducted in Kazakhstan supports most of the obstacles to studying international experience in green building and further application in the construction process.

This experience, adjusted for the national law and practice, can be successfully used in Kazakhstan. International practice shows that the most efficient ecological construction developed subject to the implementation of measures at the various levels of regulation of the construction process. The definition of government goals achieves energy efficiency, modernization of the legal framework of construction, financing, implementation and promotion of green technology. The advanced countries have a significant and fruitful experience in introducing and implementing measures to promote sustainable construction.

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