



Research Paper

Assessing the situation of body of the city in order to optimize energy Consumption the case study A rashidiyeh neighborhood of Tabriz

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ABSTRACT

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The purpose of this research is to evaluate the state of the city body in order to optimize energy consumption in Rashidiyeh neighborhood of Tabriz. According to its nature, the research method is descriptive-analytical and practical in terms of purpose. The statistical population consists of citizens living in Rashidiyeh neighborhood of Tabriz. The statistical sample size was calculated according to Cochran's formula of 384 people.

Examining the results of the sample T-Tech test shows that all three physical indicators of the neighborhood, including mass, passage, and open space indicators, were significant at a level of less than 0.05. In this context, the index of open space with an average of 3.32 is in an average condition, and two indicators of mass and roads are evaluated in poor condition with an average of 2.59 and 2.52, respectively. The reasons for this condition are the lack of installation of building blocks in the direction of wind and light, lack of access to services, improper exterior covering of buildings in order to reduce energy, use of poor quality materials, lack of design of roads for air conditioning in the city, obstruction the view pointed to the sky and residential density. Finally, Pearson's correlation showed that there is a relationship between the physical indicators of the neighborhood in optimizing energy consumption. The highest correlation is related to mass index with open space with a value of (0.785), which is considered a strong relationship.

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Extended Abstract

Introduction

According to the significant statistical growth of research in the field of energy analysis at the neighborhood scale since 2010, the neighborhood as an intermediate scale is an important evaluation index for the demand for energy consumption and production in different sectors based on energy carriers, which are opportunities provides for planning in line with sustainable development. In this regard, and considering that more than one-third of energy consumption is related to residential areas, proper planning and design of neighborhoods according to the climatic conditions of each region can be an effective step towards reducing energy consumption. Therefore, cities consume the most energy resources and produce the most carbon dioxide. One of the main factors of achieving sustainability by reducing energy consumption is understanding how the components of the body of the city affect energy consumption and modifying the body of the city. The purpose of this research is to evaluate the state of the city body in order to optimize energy consumption in Rashidiyeh neighborhood of Tabriz.

Methodology

According to its nature, the research method is descriptive-analytical and practical in terms of purpose. The statistical population is citizens living in Rashidiyeh neighborhood of Tabriz. Based on Tabriz Municipality and the Statistics Center of Iran (2015), there were 178,992 people. The size of the statistical sample was calculated according to Cochran's formula of 384 people, and random sampling was done at the level of citizens. After collecting the necessary data, raw data was entered into SPSS software, and finally, based on the data entered into the software, the information obtained from the questionnaire was experimented and analyzed. In this research, 30 questionnaires were used to measure the tool's reliability. Cronbach's alpha coefficient was calculated

for indicators greater than 0.70. So the data are reliable.

Results and discussion

The sample t-test shows that all three physical indicators of the neighborhood, including mass, passage, and open space indicators, were significant at the level of less than 0.05. In this context, the open space index with an average of 3.32 is in an average condition, and two indices of mass and roads are evaluated in poor condition with an average of 2.59 and 2.52, respectively. The reasons for this condition can be the lack of installation of building blocks in the direction of wind and light, lack of access to services, improper exterior covering of buildings to reduce energy, use of poor quality materials, lack of design of the roads for air conditioning in the city, obstruction The view pointed to the sky and residential density.

Also, Pearson's correlation showed that there is a relationship between the physical indicators of the neighborhood in optimizing energy consumption. The highest correlation is related to mass index with open space with a value of (0.785), which is considered a strong relationship. Therefore, the proper placement of buildings in terms of wind and light direction, proper coverage and compliance with density can help to improve the open space, and on the contrary, choosing the right angle and increasing the visibility factor can help the mass index, and the result of this relationship is reducing the optimal consumption. is energy Therefore, despite the weak conditions, physical indicators can be effective in improving each other and create better conditions in terms of optimal energy consumption.

The results have shown that there is a significant difference between the investigated neighborhoods in the field of all the physical indicators of the residential areas (mass index, roads, and open space). In other words, the minimum average of one of the studied localities differs from others in all the mentioned dimensions. A significance level of less than 0.05 and

equal to 0.000 for all indicators confirm this situation.

The results of Duncan's test showed that in terms of mass index, area 7 had the best conditions with an average of 3.42, and area 1 had the worst conditions with an average of 2. In terms of traffic index, range 3, with an average of 3.96, has the best condition, and range 1, with an average of 2, has the worst condition. Regarding the open space index of residential areas, area 2 has the best condition with an average of 3.50, and area 6 has the worst condition with an average of 2.25.

Conclusion

According to the findings of the research, it can be concluded that the mass index is in a weak state; Therefore, Rushdieh neighborhood cannot be effective in optimizing energy consumption in terms of mass index; because of the residential density of the neighborhood, access to service uses in the neighborhood, the placement of building blocks in order to receive proper light, etc. are in an unfavorable condition. In fact, if these factors improve at the neighborhood level, it can be hoped that the conditions of Tudeh index in Rashidiyeh neighborhood can improve in order to optimize energy consumption. Also, in the field of open space in the neighborhood to reduce energy

consumption, the indices of sky visibility and the angle of the urban horizon in the neighborhood have not been acceptable. Based on this, Rashidiyeh neighborhood does not have enough space to move air and create a stable condition. This ultimately leads to an increase in energy consumption. In addition, the result shows that the design of the streets and the network of roads in the direction of air conditioning in the studied neighborhood is weak; because proper air conditioning can be effective in managing and optimizing energy consumption at different times in addition to reducing many harmful gases in the neighborhood.

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Authors' Contribution

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Conflict of Interest

Authors declared no conflict of interest.

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