

## Investigating the effective physical factors of water consumption in order to prevent the urban water crisis in the scale of neighborhood (Case study: Al-Ghadir neighborhood in the Kerman city)

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### Extended Abstract

**Objective:** Population growth and changing climatic conditions affect water resources. There are two planning strategies for urban water supply: First, providing clean and reliable resources and second, managing water demand. The second option seeks to reduce water consumption. Traditionally, urban planners have not been involved in urban water management. However, the way cities are built directly affects water use and supply. Water resources in the present age affect the three dimensions of economic benefits, environmental sustainability and living needs on our social life. Today, scarcity of fresh water resources is a global issue, and the world is rapidly approaching the depths of the catastrophe of water scarcity and the resulting problems. Many cities in arid regions are on the verge of water shortages. Kerman province has potential and actual natural and human abilities that have attracted a large population. In addition to the limitations of climate and water resources, society has faced with serious threats due to the annual rainfall. According to the mentioned cases, the planners influence the way of using water through zoning, construction regulations by shaping the built environment, through land use regulations. Safe and purified water is vital to creating the desirable spaces, and it is the job of the urban planner to create such place for the people.

**Methods:** The goal of this article is to recognize the relation between built-environment indicators with how to use water in the level of quarter for increasing water protection. Based on this matter, 9 indicators in this field has been identified as effective urbanization's factors in the management of water consumption, and then the average of water consumption in each category was extracted. Also categorized data in different groups according to slightly indicator entered into SPSS software for statistical analysis. And in the process of analysis of the ANOVA method and multiple comparisons to specify the level of the indicators' importance and then the Friedman-Test to specify the level of the impact of indicators on Al-Ghadir Neighborhood has been used.

**Results:** Findings have shown that the main urban planning factors according to the form of urban blocks that affect water consumption include Area Index, Contiguity Index, Core Index, Fractal Index, Perimeter to Area Ratio, Related Circumscribing Circule, Rotation Index, Shape Factor and Environmental Index. Respectively, perimeter ratio indicators on area and the rotation of block with maximum impact on water

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consumption and the indicator of shape, continuity and area can have minimum impact on water consumption in Al-Ghadir Neighborhood. The results of statistical analysis of each of the indicators show the role of each factor on the average water consumption in each block. Therefore, considering each indicator in the design of urban spaces in order to reduce per capita water consumption is of particular importance.

**Conclusion:** Therefore, Results have shown that urban planners have been able to promote the protection of the urban water by using planning strategies and designing in the level of Neighborhood and shaping the built-environment and adjusting land use. And they can affect on how to consume water in cities. A comprehensive approach to all these categories and logical and reasonable connection between them and their pervasive development that is the only reasonable way to manage water in cities. This research shows that water use is a feature of a neighborhood and it is also affected by the physical characteristics of a single property. Evidence presented in this study, together with confirmed evidence from other studies, shows that the built environment has a significant impact on how water is used. Based on previous results and considering that in addition to the problems caused by climate change, the population in arid and semi-arid countries is increasing. In this paper, the effects of the urban block form of the built environment on water use are shown, which city planners have an important role in recovering city water. While increasing supply may be another option, managing urban demand and promoting urban water conservation will be critical to conserving water resources. In addition, there are problems when land use planning is not in line with demand management. Because of new developments, regardless of water resources, put pressure on water resources. Urban planners can expand the range of tools available to water managers and can work together to improve water conservation.

**Keywords:** Water Consumption, Water Crisis, Neighborhood, Built-Environment, Urbanism.

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