The Sustainable Urban Design in Mountainous Regions

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ABSTRACT

The modern world is facing many challenges that keep pace with urban development accelerated, the consumption of energy sources in the growing steadily in order to achieve an appropriate environment for the convenience of man, and the damage caused by excessive use of these energies the traditional urban development and their negative impact on the natural environment continues to increase private in urban areas. The research pros rely on renewable natural resources in the field of urban development, sustainable, and the negative impact of excessive use of these resources, the most important applications of the use of sources of renewable natural resources in the construction, and use it to create a sustainable environment check the principles of sustainability of energy conservation, and exploitation of natural resources and respect the site and other guideline principles and objectives, without prejudice to the right of future generations in this environment. The city of Dohuk in northern Iraq, including the districts and the township has a lot of potential natural and climatic conditions that could benefit from the creation of a sustainable environment achieve the principles of sustainability and energy conservation, and exploitation of natural resources and respect for the site, we note the absence of a clear strategy in the investment of the natural resources of the mountain environment.

INTRODUCTION

The principles of sustainable architecture and energy conservation has assets linked to energy crisis in the seventies, where he became the world forced to respect the environment and the exploitation of its natural resources, has appeared Architects think of the wisdom of the presence of buildings, box surrounded by glass, steel and require heating enormous and cooling systems is expensive, and do not conform to or respected site[1]. The impact of climatic factors on the human and built environment shows through the need to use energy for heating and cooling, according to climate zone, to provide thermal comfort inside the building, even if we look at the urban environment of modern, we find that most of the buildings depends on the power of air conditioners in spite of a lot of negatives resulting from their use[2].

With regards to the use of natural energy of the sun and the wind and rain, you must use appropriate methods of design with the surrounding environment to reach the optimal exploitation of this energy.[3] Design faults and without consciousness to the importance of sustainability by the architects are the reasons for poor building design[4]. As that energy conservation is to design buildings in a way is a reduced need for energy the necessary adaptation of buildings as well as reduce energy consumption or fuel for process heating winter through the thermal insulation of buildings and rely heavily on natural energies and renewable and especially solar energy[5]. The sun energy will radiate the heat frome outside wall transmitted in to the building[6]. And in the same time, the excellent building design is to avoid intensity of solar radiation [7]. There is no doubt that energy saving as a key factor in ensuring environmental sustainability will become the main driving force of the construction in the future[8].

Methodology:

The Data collection for this research was collected by doing some survey which it used to get more information for this research through the reach to the most important possibilities for this mountainous region and thus invested appropriately. The second phase is the selection of a sample of buildings, a variety of

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functions from the region for the purpose of analysis, which consists of (a school, a police station, the center of the protection of forests, restaurants, houses). The research was based on a special form derived from the potential of the region in order to analyze the samples selected.

Fig. 1: Samples from mountainous regions in the city of Dohuk in northern Iraq.

But in order to achieve this goal has been the study of privacy climate and natural environment of the mountain, including the study area, and to identify the goals and principles of sustainable architecture, and the possibilities of natural and climatic Zawita township. And then find out how to apply principles of sustainable architecture for the region through the study of the influence of climatic factor for the environment mountain (temperature, wind movement, solar radiation), as well as natural factors of the area (topography, water bodies, vegetation cover) on a set of samples taken from the area the study (a school, a police station, the center of the protection of forests, booths, restaurant, houses) where the research adopted a special form derived from the potential of the region in order to analyze the samples selected (table 1).

RESULTS AND DISCUSSION

Through the results related to the variables of Natural Resources (Table 1) show that the percentage (12.5%) depends on the water resources of the region to the beautification of the site and the work of the fountains, and the ratio (100%) dependent on water resources for daily use. Results related with the variables of solar radiation show that the percentage (75%) relies on solar radiation in natural light, and the ratio (zero%) relies radiation to heat water use. Results related to the variables vegetation cover shows that the percentage (37.5%) takes advantage of the vegetation in the work umbrellas, and other items, and the percentage (zero%) depends on the wood of trees as constructivism, and that the percentage (62.5%) takes advantage of the trees as barriers to the building to control the speed of the wind and filtering the wind of dirt and dust.

Table 1: measurement table for variable that tested in for the sample.

<table>
<thead>
<tr>
<th></th>
<th>Police station</th>
<th>School</th>
<th>Environment center</th>
<th>Casino</th>
<th>Restaurant</th>
<th>House (1)</th>
<th>House (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Potential</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Resources</td>
<td>Beauty site (fountains)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The daily use</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar radiation</td>
<td>Natural light</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heating water use</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>Natural ventilation of the building</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Electric power generation</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
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</tr>
<tr>
<td>Vegetation cover</td>
<td>Improve the surrounding environment</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Timber (as constructions)</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barriers to control the speed of wind</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topographical</td>
<td>Save Energy</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building materials</td>
<td>Integration with the site</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary:

Note the lack of exploitation in the principles of sustainable architecture in the study area, as shown by an examination of the functional models of various types. Where the study showed a lack of awareness of how to invest in the region's natural resources, especially vegetation that does not need to cost a big economic. In addition to the lack of investment wind for multiple purposes, and perhaps this is related to the lack of awareness on how to invest and a lack of technological methods to transform such as wind to energies of several of the building. As with regard to building materials in the region, it is revealed through results show that a significant proportion of the building have been exploiting materials where construction and especially the
stone, with the advantage that the region is a variety of types of building materials such as stones, rocks and aluminum, which is possible in the construction and exploitation that achieve most of the principles of sustainability.

REFERENCES