

The Role of Climate in Sustainable Development, Based on Iran Traditional Architectural Patterns (Case Study: Yazd and Rasht)

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ABSTRACT

Abnormal activity of architecture, construction methods and lifestyles in conventional structures, an important role in crisis (climate change, depletion of resources and pollution) to the environment, is in this respect, innovation ideas and create effective strategies to improve the status quo in goals the architectural development programs, and a set of ideas and practices related to this type of architecture, as (sustainability) is known. Traditional architecture in different periods, to adjust the living conditions of climates, so that conditions for the enjoyment of people's lives. Also, considering the difficulties that we are now in architecture, detection and analysis features of each region, and the effects of its climate, can provide useful information for designing, for us.

Therefore, understanding the traditional architecture of Iran, as a full manifestation of sustainable architecture is important. We have major problems in many countries, especially in developing countries, the concepts of sustainability and sustainable development, and this has led to navigate and achieve sustainable architecture. Original plans, the adoption of traditional architecture, look in the Province of Iran, as an example of sustainable architecture, in their ability to respond to environmental problems, over a long period of time, this article also delves into traditional forms of architecture, with a modern building. The result showed the effect of climate on the development of traditional architecture, one of the main areas of sustainable development.

KEYWORDS: Iranian traditional architecture, climate, sustainable development, climate design

1. INTRODUCTION

Art and architecture in Iran, a long history of great. Traditional architecture, based on the climate of the country is formed, is designed. There are traditional houses, and attractive design elements in Iran evidence of Iran's architectural heritage.

In the old, narrow winding streets, alleys with adobe and brick walls, often made at various intervals was formed. In traditional architecture, man and nature, and natural elements (water, earth, air and light), is considered in the development of architectural spaces, respectively. This form of design, are commonplace in Iran, the ideal form of sustainable architecture that is based on the climate in each area. Traditional architecture in the region is an example of sustainable architecture. The research to identify different climates, in every region of Iran, and their impact on the development of traditional architectural elements, in addition to the principles of sustainable architecture, traditional architecture, a complete model of sustainable architecture. Also looking for a new concept, with sustainable development as outlined, and consequently the important role of the built environment, through sustainable development, is of interest to scholars. So for better awareness regarding the issues and views expressed in this context, awareness is better. This article tries, different views about the role of climate in sustainable development, Iran's traditional architecture.

1-1 problem statement

Man collision with nature and architecture, the reaction is, every human being in every region of the world have, and will. Architectural remnants from the past, this fully shows that this issue is fully.

Here we see various traditional architecture in Iran, in accordance with the same climate zone, are harmonious, that show the specific characteristics of their area, as well as due to different climate conditions, different architecture in the region. In order to investigate the role of climate in sustainable development based on traditional architecture, explorers points to consider include:

- 1) climate characteristics of each region, what will be the impact on the architecture of the area?

- 2) How to use local materials, and energy Renewable in architecture, according to each region What is?
- 3) the effect of climate on the development of traditional architectural elements of Iran?

1-2 REVIEW OF THE LITERATURE

In order to provide the appropriate subject experts view that, in the context of traditional Iranian architecture and its relationship with their compliance with the terms of the climate and sustainable construction have been investigated and the investigation, a summary of the comments of some of them, the choice we have made, and will be evaluated.

- Darab Diba and Shahrar Yaghini: in his studies, the study of vernacular architecture in Gilan "in the study of traditional architecture, based on environmental conditions", and at first the associated housing construction in Gilan, according to the position of environment residential buildings, some type of housing model were evaluated.

Then check the interior spaces of the traditional houses of Gilan, architectural space have been divided into three categories:

- ♣ Enclosed spaces, including rooms
- ♣ semi-open spaces, including balconies
- ♣ open spaces, including the area around the house is a courtyard that matter as much as the rest of the house.

1-3 theoretical framework

According to many studies that, in designing the building, according to climatic conditions as well, noting that in studies, the topic of sustainable development in relation to elements in traditional buildings, the issue has not been addressed It is, and has always been how to create the buildings, adaptation to climatic conditions around them, in different areas is Been paid. In discussing sustainable development, as well as the architecture of each building should be stable, with the bed and the natural environment and climate of their environment, related, one thing is clear. Part of this issue is how to interact, and the type of measures is taken into account. This is exactly the issue that seals to the inhabitants of this land, with particular expertise Benefited, and the implementation of special rules and techniques in the field of efficient use of energy, and natural resources (sun, wind,), consistent with the climate of the region have used it. Unfortunately, today, the negligence, the destruction is forgotten. These measures not only in the environmental field, but also in other aspects of sustainability, such as socio-cultural aspects, economic well.

1-4 Methods

in the Iran different climates, traditional architecture in different areas of the building in relation to the climate, and conditions are considered stable. So when different species in different regions, that is affected by climatic factors. Climatic conditions in Iran, an important role in the formation of traditional structures, identify the differences in climate and its impact on the elements and traditional buildings, the measures that, according to the ways it can be useful, in order to accommodate the climate of sustainable development, the pattern of architecture Traditional provided.

In this article, two of the cities that are located in two different climates, evaluated, and selected traditional elements of sustainable architecture, a case is also shown.

2. Theoretical Foundations

This section examines the climate and its impact on traditional architecture, as well as discuss sustainable architecture and development of Persian architecture.

2-1 climates in architecture

The importance of climate influence on architecture, especially in our country, the diversity of climatic conditions it is obvious conducted comprehensive studies in this field requires.

Climate divisions in global

The division of the many region world climate, a variety of methods has been proposed that, through a voucher method - Austrian scientist, has been accepted. Coupon based on the development of

plant growth, five types of climate on a global scale, has introduced, are as follows: Tropical rainy climate: in this region, there is no cold season, and the average air temperature in the coldest month of the year, more than 18 degrees Celsius.

Hot and dry climate: in these areas because the annual precipitation, water vapor does not provide for the air humidity, the air is generally dry.

Warm-temperate climate: average temperature in the coldest month of the year in these areas, between 18 and 3 degrees Celsius, and the average air temperature in the warmest month of the year, more than 10 degrees Celsius. In these areas, the short winter, but it may be about a month or frozen ground, or covered with snow.

Cold and snowy climate: In this climate, the average temperature in the warmest month of the year, more than 10 degrees in the coldest of months, less than 3 degrees Celsius. Rainfall in these areas, usually "in the form of snow, and within a few months of the year, the ground is covered with snow and ice.

Polar climate: the climate, the average temperature in the warmest month of the year, less than 10 degrees Celsius. Here, unlike the rainy tropical climate, warm season there. [1]

2-1-1 climate divisions in Iran

Basically, in many parts of the world, climate by latitude, and altitude is determined. Iran, being between 25 and 40 degrees northern latitude, the area is warm, and in terms of height, the high plateau is that, overall levels of the height above sea level, less than 475 meters, a very small percentage of the whole country, up.

Although Iran has two large water area (the Caspian Sea and the Persian Gulf), is due to Alborz and Zagros Mountains, and placement of the effects of these two areas of the area is very close to them, and these areas are rarely the effect of adjusting the temperature of internal parts. No doubt the mountainous country like Iran, never the colon are different climate. However, the best way to achieve fundamental, in order to determine climatic zones, the principles of coupons that inevitably should be followed.

Therefore, Iran's four divisions, which by doctor Hasan Ganji, proposed contract can not be used. He coupons division, with little change with regard to the geographical features of the country, the following is accepted.

The temperate and humid climate (Caspian Sea)

Cold climate (the Western Mountains)

Warm dry climate (Central Plateau)

Hot and humid climate (South Coast)

The temperate and humid climate (Caspian Sea)

Caspian Sea coast, with a mild climate and abundant rainfall, including areas is moderate. The area, in a band between Alborz, and surrounded the Caspian Sea, is made up of postal plains, everything is moving towards the East, humidity and reduced air moderation. In fact, Alborz that, between two opposing weather, e-Caspian steppes, separate from the central plateau. Features such as climate, air moisture and moderate temperature is high. The air temperature in the summer, usually between 25 and 30 ° C, and at night, between 20 and 23 degrees Celsius, and in winter is usually above zero. In this area, very high rainfall, and in the summer by storm. Rasht, Anzali port, Babolsar and Gorgan, are in the area.

2.1.2 Distribution of the climate and architectural typology

According to the shape, and composition of the vernacular architecture of different regions of the country, we understand the different characteristics of each of these climates, a great influence in the formation of urban and architectural composition were areas. Therefore, accurate determination of significant areas of the country, and access to different climatic zones, in appropriate plans, and consistent with the climate of each region is very important. City and Province, both man-made and natural systems that affect very close to each other, as far as climate and human comfort, respect the result of factors, such as: radiation, temperature, humidity, wind and rainfall. Climate, location, special conditions are, however, limitations in the field of urban design, as well. In different areas of the city, such as buildings, lawns, roads, etc., in addition to functional qualities, visual and aesthetic, thanks to the climate of the city, and standards are essential climatic design and attention to this issue, certain problems to create it. One reason for the emergence of energy crises, environmental and contemporary,

lack of attention to climate differences. Outdoor central courtyard, the traditional architecture, with its unique features, from the attention to the impact of climate aspects, on architecture. Convergence of natural and climatic factors, primarily with regard to the environmental situation of the city, as a key factor in planning, developing, and then using local materials and natural elements, respect and attention to environmental constraints such as slope, topography and vegetation, the climate, and the amount of water needed to maintain the plant, and use of the climatic regulator, as restrictions on the formation of street networks, urban spaces and buildings result is. [2]

2-2 stability Concept

2.2.1 Stability in word

The verb "Sustain", the year 1221 AD was used in the English language, and from the Latin root "Sub" and "tenere", meaning to maintain or keep up taken. Other meanings of the word "Sustain", has been for centuries, but only in recent decades that the term sustainability "with its current meaning, ie what can be sustained in the future, those of Application. (Bahreini, Seyed Hosein, Maknon, Reza (2001)

In the Word dictionary, and modal also Persian culture, the concept of sustainable stability, and resistance of the infinitive "monitoring", in the sense of stability and strength of the show, said. For stability as well, it is stated meanings: a stable, enduring and resisting. So sustainability which, as of Sustainability, was chosen today is without meaning, and to maintain the stability and convenience. Sustainability means that, in this debate is concerned, is: "What can continue in the future" (Asadpoor., Ali(2006)

2-2-2 Sustainable Development

In order to better understand the concept of sustainable architecture, it is necessary to first clear definition of the concept of "sustainable development" to be provided. The most common definition of sustainability, which is defined, the World Commission on Environment and Development (WCED), has to offer. The Commission, sustainable development as development that the requirements of the present generation without compromising the ability of future generations, will meet the needs of the individual, is defined. Based on this definition, before any society can, to justice between generations is stable, secure. Social and economic development must be fulfilled so that, at any time on future generations, imposed costs, the effects of economic activity, are minimized. When the vital activities of the present, the future costs to impose) such as mineral drilling Nonrenewable (, damages should be compensated fully. Therefore, sustainable development is a comprehensive concept, and to all aspects of human life is concerned, and the implementation of development models stable, requires fundamental changes in national and international policies, in general, environmental sustainability, with the aim of protecting the environment, on issues such as waste reduction and energy distribution in the environment, reduce production Influences on human health, the elimination of toxic substances is. Therefore all the drawings which, in conjunction with the system is sustainable, it must somehow be predictions for the future. For example, a building must be designed, reuse it, or even be considered creative elements. This foresight to meet the needs of future generations, to come.

2-2-3 Sustainable Architecture

The application of the concepts of sustainability and sustainable development in architectural discussion as sustainable architecture, has created. The main ideas of sustainable architecture, the ability to change, and the flexibility and potential energy) energy is used to produce materials, (is. Sustainable architecture, like other categories of architecture, with its own rules, and three phase involves saving the resources, planning to return to the life cycle, designing for people, each of whom have their own strategies, and identify and study these measures, architect to the understanding of the environment, should be designed to do that implies.

2-2-4 Principles of Sustainable Design

Some buildings have features and characteristics that make them among the stable buildings. The principles that must be met, to a building classified as a sustainable architecture, as follows:

The first principle, energy conservation: building should be constructed, the building needs to fossil fuels, to a minimum.

The second principle, in coordination with the climate: the building must be designed so that, with the climate and energy resources in the construction, fit and function.

The third principle, reduce the use of new sources of materials: Buildings must be designed in such a way that, the use of new resources, as much as possible reduced and the end of their life, to build a new building, to be used as a new source.

Fourth, to meet the needs of residents in sustainable architecture to meet the physical and emotional needs of residents, of particular importance in the region.

The fifth principle, in coordination with the site: The site should be placed gently on the ground, and be compatible with surroundings. Article VI, holism: all the principles of sustainable architecture, must complete a process that leads to a healthy environment is Harden, embodied.

2-2-5 sustainable architectural principles in traditional architecture in Iran

The phenomenon of vernacular architecture, as a category in aesthetics and mysticism, in purity of thought and respect for nature, is a very important issue. Vernacular architecture, however, throughout history, has been transformative phenomena, but managed to keep its special identity, and represents the tradition, spirit and feelings, ideas and beliefs, tastes and their art. Today, tends to be more traditional architecture and decoration, and less content and is functional. [3] The structural elements of traditional architecture, such as wind towers, domes, the central courtyard, Shovadan, Zamharir, awnings and the like that have a significant environmental performance, and the need for building largely on conventional fuels, were low, in education are considered less architecture. In many developing countries, this training only descriptive position, and the method of employing and combining it with modern architecture and to get the kind of architecture, with excellent performance, there is less indication. City and Province, both man-made and natural systems that have close interactions. Cities, as far as human comfort is the result of factors, such as: radiation, temperature, humidity, wind and rain. Climate, location, special conditions are, however, limitations in the field of urban design, as well. In different areas of the city, such as buildings, lawns, roads, etc., in addition to the quality of performance, visual and aesthetic, thanks to the climate of the city, and standards are essential climatic design, and lack of attention to this issue, create certain problems, does. One reason for the emergence of contemporary energy and environmental crises, lack of attention to the difference in climate. Outdoor central courtyard in traditional architecture, with its unique features, from the aspects of climate, architecture bed. Convergence of natural and climatic factors, primarily with regard to urban environmental situation, as a key factor in planning, developing, and using local materials and natural elements, respect and attention to environmental constraints such as slope, topography and vegetation, according to climate and water consumption needed to maintain the plant and the climate regulators, as restrictions on the formation of networks of pathways, spaces and buildings result is.

2-3 traditional architecture of Iran

In this area, the most important architectural elements of the value of any nation, has a considerable role, and in the area of responsibility of the architects of this era, is placed. The principles that Mohammad Karim Pirnia, suggests five things:

- People enclosing: the use of human scale, and avoid any futility, and the glory of displacement and decorated unprofitable.

- Self-sufficiency: the use of facilities and local materials, and what architects (the canvas) said, and avoid any dependency and need. Treaty: the size and scale that fit body and body building, in terms of integrity, stability and beauty of the guarantee.

- Introspection: this principle, especially in homes that have always been of interest to the people of the land, and have been good, four is optional wall.

- Corner and need: the need to avoid the application of measures that would have been a waste of materials and increasing costs.

In addition to the mentioned principles, elements such as water, light, wind, etc., in traditional architecture, we have a vital role to play. One of the major issues in the identification of Iranian traditional architecture, traditional architecture culture gap, and the emergence of new forms of architectural and urban space is often quite different from traditional space, because many architects, most of all phenomena formal and visual thought, and many of the issues, topics and points of cultural, historical and social, not enough attention.

Traditional architecture, before the advent of technology and new construction materials, in all parts of the country, and in any form or by any quality, kind of architecture, landscape and identity was considered that, in the years and centuries, materials and technical methods its special, that. This type of building native, was a very timely, timely and very important and logical, and sometimes very glorious, and still a noble architecture, and has a human scale, with the same value and credibility. Iranian architecture analysis shows that, despite the diversity and complexity of the structures, principles and concepts and patterns over time, different species have been used in the architecture, in addition to the result that evolution Iranian architecture more on promoting the principles and concepts and new models, in the form of intelligent activity, and subtly architecture was built. With reception This may in architecture today in Iran, as fundamental and payment patterns, and they are in the process of creative activity, developed and carried out.

By analyzing patterns of architectural history, and the basic elements of them, it is concluded that, although each of these elements and patterns in a certain period, the architectural history of this country have been created, but with prolonged periods Next, evolution and refined, and has since been an independent identity. General concept of a pattern, or an architectural element that, many found dignity and have a mental image and emotional charge. [5]

3. Review the climate impact in the elements and Iran traditional architectures in Case study

3-1 temperate and wet climate:

Caspian Sea coast, with a temperate climate and abundant rainfall, the region is moderate. This area is a strip of Alborz Mountains, and surrounded by the Caspian Sea, the plain postal been formed, the advance toward the East, humidity and air moderation it will be reduced. In fact, the Alborz mountain range, between two opposing climate, post-Caspian plain, the central plateau separated. Among the features of this region, high humidity air, and moderate its temperature. The air temperature in summer days, usually between 22 to 33 degrees Celsius and at night between 23 to 23 degrees Celsius, and in winter usually above zero. In this area, the rainfall is very high and in summer the storm. [6]

3-1-1 native architectural features

Indigenous and traditional architectural features of the region, the best harmony with their region, are as follows:

Buildings in these areas due to the high humidity of air and soil, are usually single, and the ability to flow around it there. Due to the high moisture content of the soil, buildings usually are on the platform or pilot, and lacks are underground. Most of the front room, with open spaces connected, in other words, around the building, with courtyards and open spaces enclosed, and multiple openings in the body structure at the front of the windward and leeward there. In some areas of this region, which is a two-storey building, the second floor due to better utilization of blind air, is used mostly in summer. The first floor of the air draft less, and less heat exchange with the open space is usually devoted to the winter areas. Ceiling is sloped, so rainwater is drained as soon as possible. Roofed porch that sometimes take on a large scale to have a significant role in the semi-open space, especially when you have rain. On the other hand, due to favorable climatic conditions in most years, a major part of life in porch, spent. Building protection from winter winds, associated with cold fuel is a necessity for architecture in this region, is considered. So often Front West - and northwest structures, exposed to the cold winds of winter are, in many ways protected. In order to prevent the erosion of the frontage, the winds accompanied by rain, the roof of the front wall, and as an umbrella to protect it - is. In some buildings, the salience as a passageway, used around the case. Wood, clay and brick of the main materials used in the walls and Harvesters wood, pottery, tin or bulb of the materials used, the roofs are sloped, with high humidity in these areas are consistent.

3.1.2 features of new architecture of Gilan

Today we witness the traditional vernacular architecture in this area are not, and instead construct buildings with metal or concrete, brick and sloping roofs covered with so-called artistic forms blindly following the breakdown of interior architecture, only to In order to respond to the needs of the family, former properties of the buildings have been replaced, and the tips led to the loss of identity of indigenous architecture, which is compatible with the environment, one of the main messages of the

new-style architecture, high cost and increased use of non-energy renewable or fossil fuels, to heating and cooling, which is due to the use of local materials.

3-2 hot and dry region architectural

In reviewing and studying the architecture of this type of climate can be many housing architecture in the central plateau of Iran noted that, introverted architecture, are consistent with this type of climate. This tutorial examines the architecture of Yazd housing, typical of Van oriented architecture, we will.

3-2-1 Yazd native architectural features

A) Building spatial structure: introspection, the main indicator of the vernacular architecture of Yazd is. This type of architecture with a central courtyard, and the rooms were usually located on the four sides, and to conditioned interior, on the corner of the tower was built. Usually in the form of sunken courtyards form, and in some cases was flat. Sunken space, underground chamber located around it, and with such a combination, cool spaces in the lower rooms there was, and will be used to flow the right way, and no artificial cooling systems not, resulting in energy consumption were reduced.

B) the effect of air flow and sunlight: in hot and dry climates such as Yazd, who along with sand storms and extreme heat in summer and cold in winter, harmony with nature and the environment, the more necessary, as an example of this climate plan must form compact, lower levels are in the sun. As explained, due to the intense radiation of sunlight in the summer and extreme cold in winter, orientation of the building on the south side, to the southeast is, the greatest amount of energy in the winter season. In order to use the suitable winds, the architects of the deflector used to this way, air can flow into the transfer room, warm and polluted sent out.

C) Building Materials: Building Materials in any weather conditions, acts as a kind, so warm and dry in the study, the type of materials used in the comfort of residents, building a strong influence. In this Regional building materials should be selected in such a way that, in the face of great resistance to heat, and the heat capacity are high. Among the materials that builders use it, the flower and its derivatives, and if the stone or wood buildings are used, it shall be mixed with soil and flowers, because this type of material does not comply with dry weather in Yazd . It is worth noting that the score needed, from the same soil, the excavation of land acquired after that, it would lead to the use of local materials, reduced energy consumption, since they no longer need to spend more energy to carry transportation of materials, from elsewhere in the desired location is not, as well as construction materials during production, use and disposal, it will not have negative effects on the environment. Another important point in the construction, material thickness ments used, the thickness of the walls must be so that sunlight could withstand the long exposure, as well as color ments used in building materials, should be clear, so that a large amount of solar energy to reflect, light-colored sand, the color of choice in the region is hot and dry materials.

3.2.2 features of Yazd new architecture

Unfortunately, with such conscious architecture, the emergence of a new architecture that is completely different climatic conditions in the region. Row houses made of concrete, steel and brick built walls and courtyards short because, on the one hand are not able to create the perfect shade, and can not stand in front of the high winds, bright sun and protect, and unfavorable conditions for the residents to create, on the other hand the use of low thickness of the walls and ceilings, the situation in the region does not have any resistance, and the use of black tar on the roof (of course you are foil insulation new level), due to the dark colors, increase the temperature in the summer, and the heat transfer through the roof, thereby reducing the temperature indoors in winter, and the use of heating appliances, with fossil energy consumption and cooling devices, that due to improper temperature indoors, used in different seasons, in general, be said that the new architecture by way of making inconsistent with the climate, causing a lack of comfort on the one hand, and on the other hand improper use of materials, and increase consumption of fossil energy, sustainable architecture that existed in the past, is not considered.

It should be noted, unfortunately, in the new building regulations (National Building Regulations), especially article 19 (saving energy), rather than consider the architecture of the past, to create materials with low energy consumption, the use of new insulation, is that, for example, can be noted

that upvc doors and windows, insulation during the most important pollutants (petrochemical derivatives) are.

4. Conclusions

Today, design creative, clear design and construction of most buildings, the architecture of the new city is visible, as is shaped by environmental conditions and climate, and with its own identity area, so what was discussed in detail on sustainable architecture, within 3 the basic principle is a tendency that, designers, directors and executive planners, attracted picks

1. According to the Environment
2. quality oriented and increase the quality of life in terms of human comfort
3. According to the next generation.

Therefore, design features, and characteristics of the materials used in the building, the reaction of the building, the factors surrounding climate, great effects. After combining traditional laws and practices, and with new techniques and methods, may be on the design of sustainable buildings, with better performance and more influential, can also add the issue in this case, the National Building Regulations experiences great architecture of the past, used to be good, and have the following benefits: protection of natural resources and construction, increasing the durability and lifespan of buildings, increase the comfort and satisfaction of the consumer, energy conservation, and materials used, prevent pollution of the natural environment and remove it.

The study was trying to, Iran traditional architectural features in both temperate and humid climate, warm and dry is processed, so that the relationship between the architecture, energy efficiency and environmental sustainability have to be addressed. In examining the traditional buildings, efficient use of renewable energy, such as air, sunlight and so on construction taking into account all manufacturers, and also has been trying to build a minimal impact on the environment is. Most importantly, the new architecture, overuse of non-renewable fossil fuels, due to the use of inappropriate materials, and more on oil derivatives (door and window upvc, new pipes, new wallpaper and flooring), which has high emissions are gay, and transport them to the wrong design, heating and cooling equipment using, is due to climatic conditions. Thus, the use of local materials, and combine them with the new conditions of construction, and the use of efficient professional experience in the energy can Renewability energies, such as solar and wind, for cooling, heating and ventilation of the building, the most and that, this requires cooperation among architects, energy experts, to take advantage of new technologies, modern architecture be in keeping with the climatic conditions of each region, was established.

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