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The Environmental Sustainability in Tourist Establishments in Siwa Oasis

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ABSTRACT

Natural environment is one of the most essential tourist-developing resources in Egypt. With the increasing concern with tourism development, balance is missing between the benefits of development and the accumulation of the adverse environmental effects. The issue of developing the desert tourism in Egypt increases because desert areas are characterized by extremely harsh climatic conditions. These local effects made the desert a zone with a special local environment that needs techniques to develop it, that differ from those used for tourism at coastal areas. Therefore, environmental access represents the framework for mental attitude health for developing the desert groupings starting from choosing the suitable development pattern to the way of planning for tourism groupings.

This present paper aims to gain access to achieve dynamic equilibrium between the local environmental data and the built-in environment and the innovative establishments. Consequently, the required environmental consistency for the tourist desert areas in Egypt is achieved. This environmental consistency outflows from the area's individuality and the spirit of the place. However, the aim of this paper can be achieved by studying the local characteristics of the natural and built-in environment in the tourist desert areas at Siwa Oasis in Egypt, and studying the environmental standards that affect the construction of the tourist establishments in the desert areas. This aim can also be achieved through an analytical study to evaluate one of the environmental hotels (Taziry Hotel) in Siwa Oasis. The paper has set a number of primary standards that are suggested to be taken into consideration when forming the construction for tourist establishments to achieve environmental sustainability.

1. INTRODUCTION

Natural environment is considered one of the most essential tourism developing resources; during the past two decades (Hashemkhani et al., 2015), the concentration has been on tourism development in Egypt, on the basis that its solicited earnings will lead to a social and economic development, and with the flow of increasing concern towards tourism development; however, balance is missing between the benefits of development and the accumulation of the negative environmental effects.

The increasing criticism of the negative impacts of tourism began in 1980. As a consequence, alternative types of Tourism have emerged such as "Green Tourism", "Nature-Oriented Tourism", and Ecotourism. These forms of tourism are characterized by being consistent with natural as well as social and community values by allowing both; hosts and guests to enjoy positive and worth-while interactions and shared experiences (Wood, M., 2000).

Consequently, tourism developing activities in Egypt became a direct source of a lot of dangers that affect the life of Man and his natural environment in the absence of an integrated approach for sustainable tourism development and constant environmental evaluation of tourism areas. The issue of developing the desert tourism in Egypt is increased because these areas are characterized by climates of very high temperature for most of the year. In addition to being affected by direct desert hinterland and exposed to natural threats like invasive sand dunes that threaten the development in a lot of tourism desert areas (E-unwto.org, 2019). . These local effects made the desert areas a sector with a special local environment that needs techniques - to develop it - that differs from that used for tourism coastal areas.

2. ECOTOURISM

Ecotourism is defined as; a form of nature-based tourism in the marketplace, but it has also been formulated and studied as a sustainable development tool by Non-Governmental Organizations (N.G.O.S), development experts and academics since 1990.

The International Ecotourism Society (I.E.S) in 1991 produced one of the earliest definitions: "Ecotourism is responsible travel to natural areas that conserves the environment and sustains the wellbeing of local people".

The World Conservation Union States in 1996 declared that ecotourism: "is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations" (Wood, 2002).

Ecotourism sub-emerged from the field of sustainable tourism development. Sustainable tourism development is based on the concept of ecologically sustainable development (E.S.D.), which means using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and quality of life for both present and future generations is increased. Although the emphasis of (E.S.D.) is often on the environmental aspect, there are three interdependent dimensions for E.S.D: economic, environmental and social. (Fig. 1). If any of these dimensions are missing, the development will not be sustainable. Largely our cultural values, rights, and responsibilities influence the way we think about these dimensions (Environment.gov.au, 2019).

Components of Ecotourism (Wall and Mathieson, 2007):

- Contributes to conservation of the biodiversity.

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- Sustains the well-being of local people.
- Includes an interpretation / learning experience.
- Involves responsible action on the part of tourists and the tourism industry.
- Is delivered primarily to small groups by small-scale business.
- Requires lowest possible consumption of non-renewable resources.
- Stresses on local participation, ownership and business opportunities particularly for rural people.

Ecotourism is a small but rapidly growing industry working within a niche market that is governed by market forces and regulations. Ecotourism is primarily advertised as being equivalent to nature tourism in the marketplace. Some countries, companies and destinations have social and environmental policies and programs, while others do not. This has led to confusion worldwide about the meaning of the term Ecotourism as it is applied in the marketplace. In Ecotourism, the prime motivation is the observation and appreciation of natural features and related cultural assets. From a functional viewpoint, ecotourism in the marketplace is mostly individual or small-scale tourism (tourist groups up to 25, and hotels with less than 100 beds) that is operated by small- and medium-sized companies in natural areas. It represents a segment of the marketplace that concentrates on leading and accommodating small groups in natural areas in an educational manner using interpretive materials and local specialist guides (Wood, 2002).

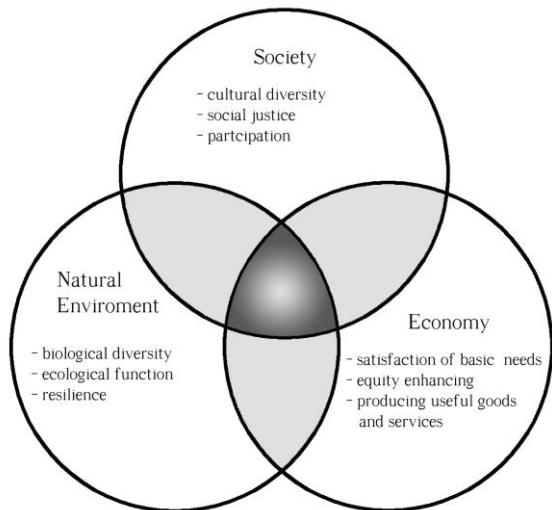


Figure 1: Ecologically sustainable development aims to achieve the best environment, economic and social outcomes.

3. SIWA OASIS

Siwa Oasis lies in the north-west of Egypt; 30 km away in the south-west of Marsa Matrouh, in which the depression extends eastward from Umm Al Saghir village 120 km away and westward till Jaghub Oasis 30 km away from the Egyptian Libyan border; Northing 255 and meridian 29 east (Saleh, 2017). It represents a depression of 77 km in which its width ranges between 5 km and 15 km and is 18 m below sea level (Fig. 2). The oasis itself consists of a number of small serried oases; Siwa is the most important oasis among them followed by Alagormy, Maraghy, Khamisa, Abu Shrouf, Korast and olives (Fig. 3).

Laying out Siwa goes back to three centuries ago, in which it was divided into a number of stages: old village stage (Sidi Muslim), old town stage (Shali), descending from the mountain to the level land stage and physical extension stage (current Siwa). Construction was affected in each of the previous stages by different geographical, population and security factors, as far as the planning ideology was the same and derived from the ideology and identity of the Arabian Desert cities. It is shown in the presence of a main road for the city that ends directly in the arena, which includes the modernized mosque and most of the commercial, social and political activities.

Siwa represents one of the oldest societies in Egypt, in which its geographical location led to its relative isolation from the surrounding societies since ancient times, which had its effect in distinguishing Siwa's society with a strong identity that appears in all the elements of customs whether the patterns of housing, clothes, jewelries or tools and the products produced by the local society. As a result of the previous factors, Siwa became a tourism destination for those who are

looking for unusual tourism and enjoying this different culture. Hence, we find a group of environmental hotels that represent Siwa's local mode and provide Siwa's food and art.

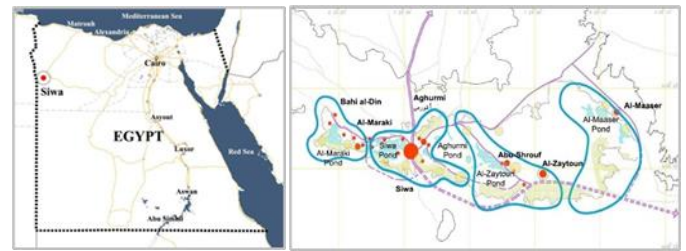
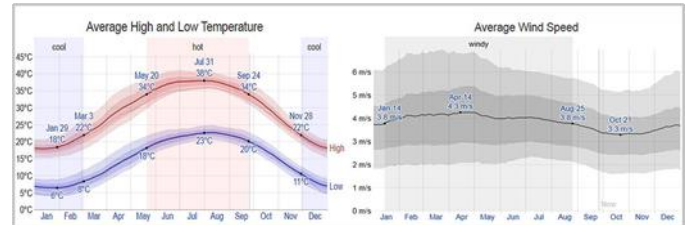


Figure 2 Left: Siwa location in Egypt

Figure 3 Right: Small oases that form Siwa oasis



With respect to climate characteristics, the hot dry regional climate is generally characterized by its high temperature in summer (45°C during the day) and biting cold in winter (10 °C during the night), in which the huge heat range between summer and winter appears. In addition, this region suffers from huge solar intensity on the horizontal facades and surfaces. Concerning the prevailing winds; it is northern and northeastern bearing dust and sand granules. In addition, it is characterized by rain rarity. For this reason, the climate is considered as a main element that specifies the design basics in desert regions; which will be discussed in the research through displaying the standards the environmental processors' basics in Siwa Oasis. (Fig. 4.a) shows average temperatures during the year, whereas the highest temperatures that have been recorded in July is about 40 °C. (Fig. 4.b) also shows the average wind speed, whereas the highest average wind speed that has been recorded during June which is 7 m/s and the annual average wind speed is 4 m/s. In (Fig. 4.c), it is clear that favorable wind directions is northwest, in which the highest speed has been recorded by this direction (Givoni,1998).

Figure (4.a and b) Temperatures and wind in Siwa (Dabaieh, Makhlouf and Hosny, 2016)

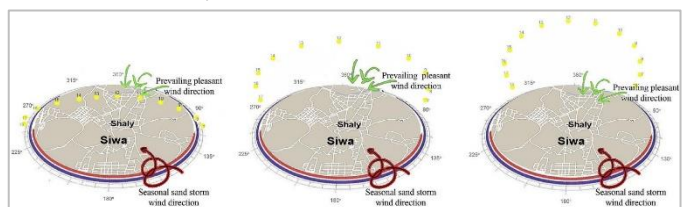


Figure 4(c): Climate characteristics (Dabaieh, Makhlouf and Hosny, 2016)

4. UNDERSTANDING THE CHARACTERISTICS OF SIWA MAN-MADE ENVIRONMENT & THEIR RESPONSE TO THE ENVIRONMENTAL CONTENT

4.1. Urban Fabric Characteristics Concerning the general characteristics of the structure and directing it: it has been shifted to compact planning patterns to reduce the exposure of the construction structure to the external climatic circumstances, in which compact planning has led to reducing the lengths of the roads and pathways, in addition to the broken lines of the pathways that are formed by different shaped sequence space that helped in reducing wind movements inside it (V.Olgay,2015). In addition, it works on providing shades. Comprehensive direction of the construction structure plays an effective role in reducing the intensity of the dry hot climate in which it is perpendicularly in the north and northwest directions.

Concerning the network distribution of the roads and construction spaces, the hierarchical grading of the road network in Siwa has been noticed, in which it has been divided into: public roads represented in the road that connects Siwa externally in addition to the road that connects North and South Siwa together. The semi public road is a road that is at the level of each section whether it is west or east,

connecting between the sections' alleyways with one another and with the public road. Semi private roads are roads that connect block of flats with one another, and they are usually covered by stalk and arcades which provides shading (Inskeep, 1991).

Construction spaces are graded in the oasis into three levels: public spaces which represent market space that is connected directly to the public road that connects North and South Siwa together, semi public spaces that exist at the level of each construction section (east- west) in which it is considered the gathering place of the family elder and ageists, and the semi private spaces that exist in the districts; these spaces represents most of old Siwa's spaces (Inskeep, 2001).

4.2. Architectural Design Basics and Standards in Siwa Oasis

Buildings in Siwa are characterized by automaticity, simplicity and deepness in view in terms of construction style and building materials and in terms of design. Some aspects are mentioned hereafter in terms of designing buildings:

a. Architectural Formalization for the Plan:

The plan is rectangular in shape with proportions: 1:1.4, 1:2 in which the courts and back yards appear, which allow carrying out a lot of activities inside their zones, in order to provide more privacy and secrecy according to the dominant customs and traditions as illustrated in Fig. (5) (Ahmed, 2014). Owing to the nature of the economic activity that is based on planting palm trees and olives, large areas in the ground floor in the house are needed for storing a large amount of the crops, to fulfill the family's consumption throughout the year; while the upper floors are devoted for living and sleeping.

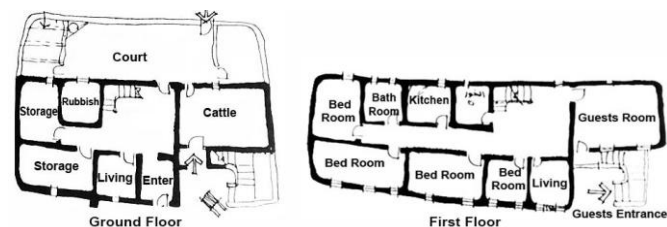


Figure 5: Ground and first floor plan for a sample house in Siwa

b. Ceilings:

Plane ceilings differ, in which they could be simple or complex according to the space size. The simple ceilings are used in roofing the spaces of certain dimensions and it is made of long palm trunks stuffed with fibers and covered by a 10 cm rammed crust called Karshif (salty masses) and there are no juts in the buildings. However, the complex ceilings are used in roofing relatively wide spaces 4-5 m. It depends on providing the ceiling with a kind of logs from palm trunks' stops, that palm trunks are placed on, beside one another; they are then covered by Karshif as shown in Fig. (6) and Fig. (7). The vertical parapets, which work on shadowing the roof deeply during the day, are used on the roof's floor itself, which reduces the amount of heat gained by the roof (Ahmed, 2014).

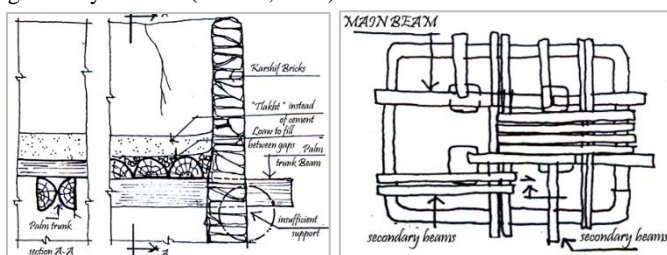


Figure 6 Left: Section showing the palm tree trunks used for roof construction

Figure 7 Right: Looking up view of the palm trunks' roof

c. Walls:

Walls are varied, most of the time, take curved shapes; and they may be built perpendicularly on each other. They are thick walls, in which their thickness range between 60-80 cm and decrease in upper floors 30-40 cm from local building materials. Karshif, which is mixed with clay, is a material that reduces thermal transition, which isolates the external area and the internal spaces. The whiteness of the walls are soft, reflecting sunlight and it is the same color of the natural soil.

d. Spaces:

The façades are characterized by a small number of spaces and small flat areas, about 5% of the façade, in which they are designed in rectangular shapes with few thresholds above which are made of Sweden wood.

5. TOURISM DEVELOPMENT IN SIWA OASIS

In this part of the research, the most important basic factors for developing tourism in the oasis, and the barriers that are encountered, are going to be studied. In addition to analyzing one of the touristic hotels that is environmentally agreeable, in order to reach an environmental entry for the key standards for the sustainable touristic development in this area.

5.1 Development Opportunities

Sweet water sources are available in more than 200 artesian springs. Some of these springs are curative for many diseases. They are used in curative tourism. They, also, diverse wild and vegetative lives, especially in Serra, El.Arg and Al.Bahrain among others, in which many touristic nature reserves can be based on as well as open desert gardens. It distinguishes and diverse the optical and aesthetic values of the natural ground formations, which includes sand formations in the great sand sea in the south of the oasis. In addition to the lakes, hills and widespread rock highlands inside the depression and at the north edge. Famous archaeological place related to the Pharaonic and roman eras exist; in which Amoun and Coronation temples are the most famous ones. In addition to the distinctive social life of the traditional oasis villages that represent the local constructive and social features.

5.2 Touristic Development Barriers

There are many development barriers in the oasis like mismanagement of water resources and the increase of their loss. In addition to the constant deterioration of the traditional architectural and constructional identity in the oasis's villages, which is represented in the collapse of the old traditional buildings and the residents' migration to them. In addition to the random incursion to the modern buildings which are unsuitable for the environmental constrains and inadequate with the private nature of the area. Besides using unsuitable materials for the environment in building, disregarding the human factor in Siwa while developing and not returning to the ideas and principles that this society has built according to, throughout the ages. In addition to the extreme insufficiency of the needs from the infrastructure and the required services for the development process. Besides, the constant destruction of the oasis's wild life as a result of oppressive hunting which caused the extinction of a lot of animals. In addition to the absence of strategy and developing plans formulated by the ministry of tourism, in Siwa Oasis.

5-3 The Current Situation for the Touristic Constructions in Siwa

The touristic development in the study phase depends on providing different accommodation service levels to fulfill the desired touristic product for different tourism sectors, since the bed capacity, in Siwa Oasis, is about 275.

Taziry and Adrar Amellal hotels are considered the most accentuated hotel examples, in which the environmental dimension was put into consideration in their designs. Taziry hotel's case is going to be analyzed in order to define the standards for designing the environmental agreeable touristic constructions in Siwa; that will confirm the concept of tourism development sustainability.

6. ANALYTICAL STUDY OF TAZIRY HOTEL, SIWA

The hotel lies 16 km away from the city center in Siwa- Marsa Matrouh, where it is located in front of the Adrar Amellal Mountain (Gaafar Mountain) and overviews the mid lake in Siwa. One can go there by bus from Cairo to Marsa Matrouh then moving to Siwa.

Hotel execution continued from 2007 to 2009. In 2010, the teamwork training started in the hotel and the work plans were set up. In 2012, the hotel was renewed, in which modern technologies were introduced to manage wastes, marketing local products with planting vegetables and fruits locally and set a program to develop the culture of the local society.

The hotel consists of 30 accommodation units (cabins, room for two people, room for three people or royal suites). Accommodation units contain windows and terraces with a swimming pool view placed in the center of the village. The hotel also contains a group of services represented in a large library (in which it includes a large number of books and manuscripts, and it helps in learning about Siwa's unique crafts like poetry and calligraphy) and a special exhibition for arts and handicrafts, in addition to a marketplace (special for selling local products produced from Siwa), garages, tracks for walking, swimming pool, contrary to Azul restaurant (a specialized restaurant for Siwa's

food), a café and a special farm for vegetables and fruits, especially for the hotel.

6.1 Environmental Planning Considerations

a. Regarding adhering to contour lines:

The ground in this area, is flat and there is no contour. The designer has distributed accommodation units around the lake's area that is located in the center, followed by the hotel's main building and the services buildings were built at the back near the mountain's foot.

b. Compatibility of urban fabric with climatic characteristics:

Because of the hot climate, the accommodation units have been designed in direct contact to each other to reduce the elements of the outer layer that are exposed to the insolation, which reduces thermal transfer inside accommodation units. The construction spaces have been designed to be shady to protect visitors from insolation during daytime. The existence of the Red Mountain as a background for the hotel and the amount of the shades that result from its presence were made use of in placing the open spaces in this shaded area. (Fig. 8)

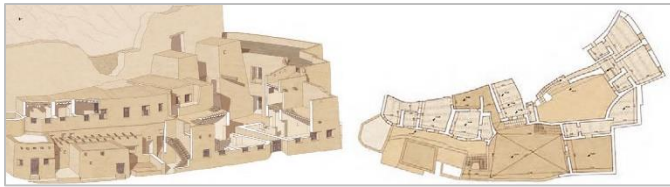


Figure 8: Environmental planning considerations in Taziry hotel

6.2 Environmental Design Considerations

a. Orientation:

The accommodation units have been oriented towards the mid lake, in addition to making a swimming pool in the mid area for increasing air hydration before it enters the accommodation units. On the part of the effect of the directing on thermal transfer, the blocks have been designed facing wind bearing granules and directed towards the mid lake which helps in cooling air before entering the accommodation units.

On the other hand, regarding the effect of the directing on natural ventilation, the spaces of the accommodation units have been designed to be in the north direction (pelagic) facing them another spaces in the opposite side, which is helpful for having good ventilation inside the blocks. Regarding the effect of the directing on natural light, natural light is depended on during the day in the accommodation units; the spaces have been designed to have two parts which are a lower part and an upper one that can be opened without breaching the privacy of the space user. Concerning the effect of directing on the vision, all the buildings have been directed especially accommodation units, in which they provide a lake view from all buildings.

b. Structure System and Building Materials:

Available and suitable building materials for the environment in Siwa were used. They used blocks of Karshif which are tied with a kind of clay that acts as a mortar and is characterized by a high thermal resistance that reduces thermal transfer between the outer and inner environments; the palm splint, that results from the destructible sections in palm gardens, were used. These splints are cut, prepared and treated by salt to prevent being infected by mites which damage the ceilings. They are covered by a mortar clay, added to them olive leaves which act as an isolator. Holding walls system was used in constructing and with the same followed way in building used in Adrar Amellal village, in which the way of building allows the presence of cold air streams as a result of the existence of yards and alcoves; and the way of constructing windows. The village's site is 18 m below sea level which decreases the temperature.

Karshif blocks and palm splints were used in building, since all of them are environmentally friendly local materials. Moreover, olive tree woods were used in making windows and palm leaf stalk was used in making furniture like beds, chairs and tables. Handmade textiles and local carpets are made use of also, since they give the place a local identity.

All used building materials in the hotel can be easily maintained in case of being damaged. Remnants of buildings that are demolished, can be recycled to make new building materials from them.

c. Design of the Building Envelope:

Clay was used basically in manufacturing the building material (Karshif) in the walls which reduced the amount of transmitted heat from outside to inside, whereas its thermal conductivity in

joule/second is 2°C and its heat capacity in joule/cm is 2°C; its time lag is an hour, in which the material's time lag is directly proportional to thermal resistance and wall thickness. Furthermore, colors were used in a way to be in harmony with the environment and Al Mossarani stone and sandstone were used in the Wainscot of some of the interior walls, in which these stones are from the local building materials. It helps in reflecting the direct solar radiation which reduces thermal transfer through the outer layer of the building. (Fig. 9).

Owing to rain rarity in the area, the ceilings have been designed to be horizontal, whereas they are made of palm splints which are covered by a layer of Karshif to prevent heat from transmitting inside the accommodation units.

All the accommodation units was designed with a rectangular plans and connected in order to reduce the amount of direct solar radiation on the accommodation units. On the other hand, the spaces are placed in the north direction opposed by spaces placed in the south direction for cross ventilation. The openings were designed to be low for the air to enter in the same level of Man's living; higher spaces are added for hot air to come out. (Fig. 10).

6.3 Considering the Standards of Preserving the Architectural Identity

Siwa is characterized by its distinguished local identity, as a result the hotel was designed using the same building materials and constructive ways by individuals from the local society; by doing so, the cultural and civilizational background of Siwa's local society are expressed. The internal furniture and the internal design elements that exist in Siwa's local environment were used. (Fig. 11).



Figure 9: Left: Harmony between the colors of the facades and the surrounding environment

Figure 10: Middle: Openings proportion in the facades

Figure 11: Right: Using of local heritage in interior design

6.4 Adhering to the Conditions, Building Laws and Planning Standards

The designer has respected the building laws and conditions that are related to the area regarding the capacity which is 30 guest maximum, on the other hand, the heights of the hotel buildings don't exceed two floors, in addition to making the height of the accommodation units that are near to the lake as one story blocks.

6.5 Sustainable Site

Palms were used in the location, since they need a small amount of water which is suitable for water rarity in the location. Shaded passages that connect the hotel buildings were made to protect the guests from direct solar radiation. Local materials were used to refurbish the outer passages which are represented in the stones in the floors and in the palm splints as pillars in the covered passages. (Fig. 12) and (Fig. 13).

6.6 Sustainability in Designing and Operating the Networks of Infrastructure

Oil lamps and candles are used in the rooms. Using renewable energy is looked for in the hotel, especially using the solar energy in heating water purposes. However, solar energy and wind energy are not used in generating electric energy. (Fig. 14).

The hotel is supplied by water using the public water network that exists in Adrar Amellal village. Furthermore, drainage takes place by using septic tanks, in which a natural method is followed to get rid of sanitation which is the wetland. This method depends on collecting all the wastes in the sanitation then to a closed tank then to a wetland of a surface area that is not less than 20 × 40 m, divided into many rooms, having gravel soil with pipes inside it that have holes which terminate in a botanical garden of a special type (reeds, lotus, papyrus).

On the other hand, there is a specified portion which manages the solid wastes and collecting them. Organic and non-organic wastes are recycled with guaranteeing safe disposal of non-organic materials.



Figure 12 Left: Outdoor furniture elements from the local environment

Figure 13 Middle: Outdoor sustainable elements

Figure 14 Right: Using of candles and oil lamps in lighting

6.7 Local Society Participation

The hotel was executed with the help of individuals from the local society and resorting to their experience during the different executing stages, whereas the building should be more resistant to area's climatic conditions; with seeking the help of individuals from the local society in managing the hotel and in the operating process.

7. RESULTS

While the paper is studying Taziry hotel, which is located in the transitional area in nature reserves, it becomes clear to us that the area's nature and nature characteristics come first among the basic standards that should be considered when forming the construction structure for tourism establishments. On the other hand, we cannot ignore the role of the construction method and choosing the suitable building materials that are agreeable with natural characteristics.

Orientation should be put into consideration during designing the tourism establishments, since orientation has an effect on thermal transition from outside to inside, ventilation and lightning; which limits the use of mechanical methods to grant thermal rest inside the spaces.

Using the building materials from the surrounding local environment, with high thermal capacity to reduce thermal transition from outside to inside. In addition, these materials should be sustainable and environmentally friendly regarding the energy content used in producing these materials, the possibility of recycling them in case of pulling down the building and reusing them again.

The designer usage of local and natural refurbishing materials that don't need hard nor costly maintenance. This adds a special identity to the touristic buildings which garbs the tourist's attention towards getting introduced to new cultures and different civilizations. Let alone, these materials are suitable to the surrounding environment and have no negative effects on the surrounding environment.

Environmental and spatial capacity of the specified place for touristic buildings must be put into consideration, in order not to affect the surrounding natural environment negatively, which contradicts the sustainable tourism development principle.

The suitability of the infrastructure (electricity- water- sanitation) to the hotel's capacity and putting into consideration water consumption rationing technologies and how to recycle wastes, separate, assort and move them to safe places that don't affect the environment negatively.

Tourism buildings owners shall be fully aware of the environmental effects that result as a result of the existence of these buildings near to nature reserves.

Concerning the social and economic sustainability, it should be put into consideration the participation of the local society individuals starting from the planning, designing and implementing stages, in addition to participating in working in these buildings whether by providing some entertaining activities represented in the local art show or offering their local food to the tourists.

8. RECOMMENDATIONS

This paper discusses a lot of recommendations that are directed to the planners and designers who are responsible for the development of desert tourism in the communication framework and being consistent with the environment. These recommendations could be classified into the following:

a. Urban Planning Recommendations

The necessity of paying attention to the desert environment and providing the required necessities for the human comfort whether it is physiological or psychological. The research specially recommend improving the environmental performance for the touristic construction in the desert areas which are considered as one of the most important sustainable tourism development axes in Egypt. In addition to the necessity of setting construction policies for desert touristic blocks which are suitable to the characteristic nature of each

area regarding the form and content. It is also important to pay attention to the necessity of the full agreement with the ecological characteristics of the location and functionalizing their elements for maximum beneficialness of these elements in forming the perfect construction structure. It should be taken into account that the outer boundaries fulfil, for the construction structure, directing the hot air streams outside the construction block and protecting it from sand dunes and its accumulation, using fences or high building blocks; the efficiency of the fences can be increased by making shelter belts. Building thick walls (duplicated) in the buildings, to help keeping the internal temperature away from the outer fluctuations of high temperature.

b. Landscape Recommendations

The necessity of using plants and plantations that are suitable for the natural and local environment which insures the sustainability of these plants' lives and contributes in rationalizing irrigation, maintenance and tracking costs. It is important to encourage the use of local and natural materials in designing components and elements of the location disposition by the help of the local residents.

c. Architectural Design Recommendations

The necessity of paying attention to the basics and standards of construction formation and designing the touristic buildings according to the following: the necessity of using local building materials with renewable resources and preventing using materials that need intensive energy which is harmful to the environment. The necessity of providing ventilation in the accommodation blocks' spaces by natural methods according to spaces' ratios and sizes and the location of the air entrance and outlet in order to fulfil the thermal comfort for the spaces' user. It is necessary to have a protection against the direct solar radiation that falls on the outer building layer by the different construction treatments. In addition to the necessity of directing the buildings to insure fulfilling a special vision. The importance of using refurbishing materials and furnishing the accommodation blocks spaces by local materials which bring on a special identity to the touristic buildings. Making use of the local employment who are characterized by having legacy and a great local experience in designing and implementing. The paper recommends the necessity of merging between the traditional methods to deal with desert touristic areas and the technologies suitable for the environment, which design solutions that spurt from the natural surrounding and their blending with the cultural, social and dogmatic background.

d. Structure systems and materials Recommendations

The necessity of knowing the most suitable methods of building for the location with putting into consideration the natural, environmental, economic and cultural aspects. In addition to the importance of choosing building methods that don't pollute the natural environment.

e. Technical Recommendations

It is recommended to use clean ways and methods in generating energy in the touristic projects (solar energy, wind energy...etc.), it is also recommended reusing the sanitation water after treatment in irrigation and soil fertilizing. It is also recommended following the ideology of reasserting and recycling in managing wastes. In addition to the necessity of being committed to the closed cycles dogma in the vital processes that form the different activities inside the touristic buildings. In addition to the necessity of paying attention to building environmental hotels (Ecolodge) that achieve the concept of sustainable tourism development.

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