

Eco Landscape For War Devastation Area In Tripoli-Libya

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Abstract – Ecological Landscape is a method of organizing the building's and maintaining the ground landscaping that considers the ecology of the site creates gardens and parks that enhance the surrounding landscape for the benefit of humans and all other organisms' life in the ecosystem. Therefore, to build an eco-landscape and sustainable urban design, these challenges need to be faced with efficient and creative ideas and hard efforts to succeed. The paper focuses on the environmental issues, investigates and works on the development of old military sites and camps, which is destroyed by the 2011 war in Tripoli, to re-functioning and developing them as entertaining places and open public green spaces for people. Therefore, these sites have been taken as a case study of the paper, to integrate them within the urban land use planning of the city of Tripoli, considering the idea of eco-sustainable landscape architecture of the urban built environment of the city. This could create solutions for the problem of the lack of open green public spaces and places in the city of Tripoli.

Index Terms - Ecological Landscaping, ecological development of old sites, eco-park planning.

I. INTRODUCTION

Urban ecology is a rapidly developing scientific discipline with great relevance to sustainable city design and management. Although several frameworks have been proposed in the last 10 years, urban ecology, as yet, has no complete, mature theory. There are, however, general principals emerging that may facilitate the development of such a theory. In the meantime, these principles can serve as useful guides for ecological landscape design and maintenance (Chen B. Z., 2006).

Sustainable landscape architecture creates ecological designs for the outdoor and urban environment.

It begins with appropriate system which addresses function, cost energy efficiency, the beauty, and environment. Broadly speaking sustainable landscape architecture is the integration of ecological, social-cultural, and economic factors in designing landscapes to help protect habitat, contribute to storm water management, conserve water among other objectives. The current trend in the practice of landscape architecture is to find the balance of aesthetics and function required for successful sustainable design (D.asla, 2009).

This article focuses on how to apply these principles in the Libyan capital (Tripoli). Especially in the areas devastated by the war in 2011. All the camps, warehouses and weapons stores in Libya, where it is a large area in the middle of the cities, had been bombed and destroyed and have become deserted, devastated and terrifying areas.

The idea of the paper is to implement the principles of cultural development, and the open green spaces of the masses in these destroyed and special places that mediate residential areas. Which has a strong and effective reference to the citizens, also, as a solution for the lack of green public spaces in the city urban and architectural fabric. It may carry a kind of positive energy that helps the Libyans to forget the past and try to build what was destroyed in a safe, sustainable and ecological way.

II. STUDY METHODOLOGY

The historical approach and description were followed in the study, for restoration, and architectural development and collection of information from the theoretical references related to the study subject. Also surveying many Arab and foreign sites from international and local institutions working in the architecture field. As well as corporate websites, magazines, periodicals and newspapers, that deal with the same theme to get an idea of the development of architecture, and improve the surrounding environment and make them sustainable.

It is a contemporary world at the international and Arab levels and notes that it serves the objectives of the study. The analytical method was used to study the possibility of applying it in Libya for the rehabilitation of destroyed areas and buildings through a case study. A sample of projects for rehabilitation of the city, such as camps, warehouses, and army stores, which were in the centers of the cities destroyed and abandoned. The essence of the work strategy in this study was almost entirely dependent on field visits and the follow-up of many of these projects on the realty by the researcher to take and analyze information through observation and photography. The analytical descriptive approach was followed in the study of the current situation and the success of the rehabilitation operations carried out in these areas after the completion of the restoration.

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III. THE IMPORTANCE OF GREEN SPACE FOR THE ENVIRONMENT

Green areas are one of the most important areas in all countries of the world, because it forms a line against erosion, dust, etc., and help to soften the air of cities as green tourist destinations. Many orchards in Libya and other countries have been neglected, due of mismanagement, water shortage, also it will be neglected in the future, plus it is expected that, the lack of green areas may affect Arab countries climatically region, as well as digging wells deeply in the desert because of the presence of many underground waters especially in Libya. And prevent the dredging and uprooting, and encourage the people to work consciously and agricultural culture using all modern technologies (H, 2017). Thus reducing the uprooting of these cultivated areas, and the resettlement of the citizens to overcome the nature, to create a temperate climate by dint of nature and green spaces as practiced in all countries of the world.

The gardens are healthy in terms of the lungs through which the cities breathe (J.Wolcha, 2 March 2014.). The increase in the garden area means the healthy environment of the human being, the high art and the taste of the peoples, and contributes greatly to the consolidation of the social ties among the people, where they meet and meet each other. And it plays a key role in beautifying cities with their different plants shapes and colors and aesthetic views such as fountains, ponds, arches and others that work to beautify the surrounding sites and attract attention to them (Bentley, 2012). A strong link between human and their surrounding area, because they need to have a place to calm, reassuring their feelings and mind. The use of trees in most cities is focused on aesthetics, behavioral and artistic values, although these values are important to a large extent, but can be used constructively or architecturally to create or identify external spaces or to make plant curtains to block some unwanted scenes. Green space may filter air, remove pollution, attenuate noise, cool temperatures, infiltrate storm water, and replenish ground water (Escobedo, 2011). Moreover, it can provide food. Trees in urban areas may reduce air pollution by absorbing pollutants from the atmosphere. It can also moderate temperatures by providing shade and cooling an area, thus helping reduce the risk of heat-related illnesses for the city (Norman, 2006).

IV. THE IMPORTANCE OF GREEN SPACES FOR THE COMMUNITY

The importance of green spaces in their positive impact on the living quality (A.Tucker, 2010).

1. Places for relaxation and psychological calm.
2. Encourage neighborhoods and intimate relations among the citizens, which strengthen their sense of belonging and familiarity to their areas of residence.
3. Promote the citizens' environmental culture.

4. Parks often serve as sites of physical activity, which is associated with enhanced health and reduced risk for all-cause mortality and many chronic diseases.
5. Children with more access to parks and recreational facilities are more active than children with less access, and most results for adults are similar.

V. ECOLOGICAL LANDSCAPE DESIGNS FALL INTO FOUR CATEGORIES

1. Preservation of existing, functioning, ecological systems.
2. Enhancement or re-establishment of degraded ecological systems.
3. Intensification of ecological processes to mitigate potential or existing ecology.
4. Environmental interventions which reduce nonrenewable resource consumption. (Çelik, 2013)

Ecologically designed urban landscapes are ones that can use both ecological processes and human values as form-giving elements. In addition to their many environmental benefits, these landscapes -which include systems such as energy-efficient buildings, and storm water.

VI. EXAMPLE

A. Central Park, New York, United States of America

Central Park, largest and most important Public Park in Manhattan, New York City. It occupies an area of 840 acres (340 hectares) and extends between 59th and 110th streets (about 2.5 miles [4 km]) and between Fifth and Eighth avenues (about 0.5 miles [0.8 km]). It was one of the first American parks to be developed using landscape architecture techniques.



Central Park, New York City

In the 1840s the increasing urbanization of Manhattan prompted the poet-editor William Cullen Bryant and the landscape architect Andrew Jackson, Downing, to call for a new, large park to be built on the island. Their views gained widespread support, and in 1856 most of the park's present land was bought with about \$5,000,000 that had been appropriated by the state legislature. The clearing of the site, which was begun in 1857, entailed the removal of a bone-boiling works, many scattered hovels and squalid farms, free-roaming livestock, and

several open drains and sewers. A plan was devised by the architects Frederick Law Olmsted and Calvert Vaux that would preserve and enhance the natural features of the terrain to provide a pastoral park for city dwellers; in 1858 the plan was chosen from 33 submitted in competition for a \$2,000 prize. During the park's ensuing construction millions of cartloads of dirt and topsoil were shifted to build the terrain, about 5,000,000 trees and shrubs were planted, a water-supply system was laid, and many bridges, arches, and roads were constructed.

The completed Central Park officially opened in 1876, and it is still one of the greatest achievements in artificial landscaping. The park's terrain and vegetation are highly varied and range from flat grassy swards, gentle slopes, and shady glens to steep, rocky ravines. The park affords interesting vistas and walks at nearly every point. The Metropolitan Museum of Art is in the park, facing Fifth Avenue (J.Makhzoumi, 1999).

There is also a zoo, an ice-skating rink, three small lakes, an open-air theatre, a band shell, many athletic playing fields and children's playgrounds, several fountains, and hundreds of small monuments and plaques scattered through the area. There is also a police station, several blockhouses dating from the early 19th century, and "Cleopatra's Needle" (an ancient Egyptian obelisk). The park has numerous footpaths and bicycle paths, and several roadways traverse it.

B. Hangzhou, China:

The scale of internal migration, urban growth, and impacts of urban transformation in China dwarf experiences elsewhere. Between 1980 and 2009 the urban population swelled by 431 million—more than the population of the United States. (Zeng, 2007)

A recent study of Shanghai found that many residents lack access to parks, and that entire areas of the city have no formal green spaces. While in the US the national median green space ratio is 50.18 m²per capita, the average is just 6.52 m²per capita in China despite more generous planning standards. The example of Hangzhou is the capital of Zhejiang Province, located approximately 200 km southeast of Shanghai. With about 6million residents, it is one of China's oldest cities. Rapid urbanization has consumed its agricultural hinter lands, and is profoundly impacting the city's environmental quality. Most days are blanketed in air pollution. The city's annual average temperatures are also the second-hottest in China, exacerbated by its impervious urban development. What sets Hangzhou apart from other Chinese cities, though, are its innovative efforts to address the declining environmental quality by restoring lost green space. These efforts include the demolition of factories for parks, retrofitting green space alongside formerly dilapidated canals, underneath and alongside main roads and railway lines, and mass tree planting along city streets (Brownson, 2001).



Hangzhou city

Hangzhou is recognized throughout China as a Garden City and renowned for its tree-lined streets, scenic West Lake National Park, and for the nation's first urban wetland park—the XiXiWet lands (about three times larger than New York's Central Park).

"Garden City" is an official designation in China, meaning that a city meets certain national standards for forest cover, amount of green space, and provision of parks—as determined through remote sensing. Since 1992, more than 600 cities have met these standards, but Hangzhou is exceptional. Due to its ambitious urban greening program, officially Hangzhou now has 166.5 km²of green spaces (about 40% of the city area). In 2012, urban green space increased by 14.4 millionm²; in 2013, the target is for an additional 13 million m². The official ratio of green space is about 15 m²per capita, and over 90% of the city's population reportedly has easy access. Large-scale reforestation has preserved and integrated historic sites such as the pagoda of the City God adjacent to Wushan Plaza into new green and open space precincts (Chen B. A., 2009).

Hangzhou's ambitious urban greening hinges upon activating neglected spaces such as land adjacent to and underneath free-ways, alongside railway lines, along the banks of canals that transect the older urban core, and on former factory sites. The goals are to reduce heat island impacts, lessen storm-water and flooding through evaporation, intercept pollutants, and reduce wind speed. Preliminary research suggests urban greening is paying dividends, with temperature reductions of between 4°and 6°in some parts of the city (Chen B. Z., 2006).

Therefore, Central park of (USA) and Hangzhou (China) both are an extreme eco-sustainable open public spaces and places of enhanced living for humans and other organisms, and facilitating the landscape architecture sustainability.

D. Warsaw, Poland:

Reconstruction whit a common vision.

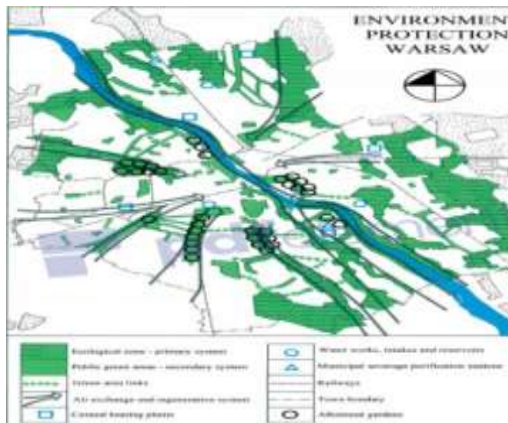


Semashko/Picture alliance/dpa ©
Warsaw- Poland 1944

In August 1944 the heart of the Polish capital was destroyed by the occupying German armed forces, which were already in retreat from the advancing Soviet Red Army. After the end of the war the joint will and effort of the Polish nation rebuilt the old city Centre, of which 85% had been destroyed or lay in ruins. The joint vision was to restore the historic city as a prime representation of Polish culture. The reconstruction of the historic Centre was a coherent and consistently implemented project overseen by the Warsaw Reconstruction Office in the years 1945-1951. It utilized extant undamaged structures built between the 14th and 18th centuries, the late-medieval network of streets and squares, including the main market square, as well as the city walls.

Two guiding principles were followed: first, to use reliable archival documents where available, and second, to recreate the historic city's late 18th-century appearance, which relied on the availability of detailed iconographic and documentary records dating from the period. Conservation inventories compiled either before 1939 or after 1944 were also used, along with the scientific knowledge and expertise of art historians, architects, and conservators.

This resurrection of an old city after its almost complete destruction provides an example of how recovery and restoration can be successful when based on a joint vision that is supported by politicians, planners and the population. In 1980, almost 30 years after the post-conflict reconstruction project, the historic Centre of Warsaw was inscribed as a UNESCO World Heritage Site in recognition of the joint effort of the Polish people (A.Andreas, 2015).



Environment spatial policy in Warsaw (Warsaw spatial development office, city council archives, drawn by Maciej Piechotka,2012)

The matters of environment protection natural resources and green urban space creation have been the subject of numerous discussion of future Warsaw development.

The several key actions that, both in Warsaw and its region achieved should be considered: (A.Pawlikowska, 2012)

- Intensification of natural resources protection, protection of natural vegetation, biodiversity, consistent system of protected areas, rehabilitation and protection of Air-ventilation channels, of green belt, of Vistula Valley.
- Improvement of insulations against high noise hazard and air quality in centrally located housing estates, along transport routes (roads, railways, air corridors).
- Satisfactory regarding population ratio, neighborhood outdoor recreation grounds, rehabilitation of urban parks, creation of sport and recreation areas with advanced amenities (L.Tinker, 1977).

The most famous green areas and parks that followed the sustainable and ecological methods are: Lazinky Park, Saxon gardens, Pole Mokotowskie Park, and Ogród Botaniczny Uniwersytetu Warszawskiego.

In post-conflict and post-disaster situations, the overall goal is the recovery of society. This aims at the consolidation of peace and security and at restoring or improving the economic, physical, social, cultural and environmental assets, systems and activities of an affected community or society, aligning with the principles of sustainable development and “build back better”. An essential part of this process is the recovery of the places’.

These Three examples could be followed in such a way to create a sustainable and ecological open public spaces and places within the cities.

VII. CASE STUDY (TRIPOLI CITY)

Tripoli is the capital of the State of Libya and the largest city in the country. The city is situated on a rocky hill overlooking the Mediterranean Sea, opposite to the island of Sicily (Italy). Tripoli- Libya is known in the Arab world as the Tripoli west for distinguishing it from the Lebanese Tripoli, which is called Tripoli East, the Levant. Statistics of the year 2012 Census indicate that the city's population has exceeded 2.682,000 people and its area extends to more than 400 square kilometers, up to sea level to 81 meters.



Tripoli city limits

A. THE CLAIMIT IN TRIPOLI

The weather in the Libyan capital is characterized as Mediterranean weather, by varying temperatures usually. The temperature average reaches 38 degrees Celsius,

while the weather turns too cold at night, where the temperature reaches 10 degrees Celsius. The majority of the population lives in the coastal areas, where the city lands are characterized by its ability for agriculture.

B. THE DEFINITION OF THE PROBLEM

Insufficient and Unequally Distribution of Green Spaces, Tripoli has a big lack of green spaces, insufficient according to international standards (commonly). The accepted standard is (10m² per capita).

The green spaces open to the public are equal to 58 ha or 3m² per capita (excluding the green belt). New green spaces areas are underdevelopment covering in total about 75 ha or 4 m² per capita. (The green belt is a project was planned from the Libyan government, it was aiming to surround the city by green public spaces to reduce the lack of green area in the city. Unfortunately, this project has stopped due of several reasons).

The lack of green spaces does not affect all districts in the same way. For example, the heart of the city is poorly greened —except the Old City of Tripoli, which is characterized with its compacted fabric, while the districts farther from the center are fairly well planted, especially the East and South-East districts.



Tripoli City Centre's Current green areas open to the public: only 30% of the population is served in a radius of 250-meter around these spaces.

The city also faces many difficulties but, the first sign of weakness appears in the degradation of the urban space.

Several districts are living a process of Degradation; green spaces decreased compared to what they were ten years ago. Roads, sidewalks and paths are in very poor conditions. Urban street furniture not exists or heavily damaged. New constructions and unplanned residential areas and scattered variation of building operations create an architectural elements scene that badly harming the city's image. Also, public lighting is incoherent Buildings deterioration is visible throughout the city (Tripoli City Centre's Urban and Architectural Charter /, 2009).

From this point of view, this article focuses on how to apply these principles in the Libyan capital, the city of Tripoli. Especially in the sites devastated by the War in 2011. All the camps, warehouses and weapons stores in Libya, which are located in the middle of the cities, have been destroyed and have become deserted, devastated and terrifying areas. As these areas can be exploited to compensate for the shortage of green areas and public parks.



Real image of camps destruction

Where there are more than seven destroyed military sites in the city center of Tripoli, can be developed and exploited to reduce the lack of public spaces and places and to integrate them within the urban fabric of Tripoli, taking into account the idea of a sustainable environment of the architecture for the coordination of urban built environmental of the city of Tripoli.



Real image of camps destruction

The idea of the paper is concentrating on implementing the principles of cultural development and the open green spaces of the masses in these destroyed and special places that mediate residential areas. It may carry a kind of positive energy that helps the Libyans to forget the past and try to rebuild what was destroyed through a safe, sustainable and ecological way.

D. THE MOST IMPORTANT ELEMENTS SHOULD BE FOLLOWING TO DESIGN THIS PROJECT

- Promote the use of materials and energies that reduce environmental pollution and carbon emissions.
- Dealing with natural resources as inputs and preserving them through reduction, reuse and recycling.
- Power generation by employing renewable sources such as solar energy and wind energy, and then storing, controlling, and directing them to all units that need energy for operation.
- Collect and Control the use of rain water.
- Collect the grey water from the surrounding buildings and reuse it to irrigate the plants and feed the water ponds and fountains in the gardens.
- Reduce the depletion of resources and adopt recycled green building materials (wood, clay, hay, etc) for resources that are harvested and obtained as sustainable.
- Plant cultivation and conservation of native and local plants, which do not need much effort in preserving, trimming and irrigating because they are adapted to the natural climate in Libya, and

its effect in the design of the important role in releasing of oxygen and its ability to absorb toxic gases, thus improving the quality of air, and its important role in noise absorption.

- Support movement of sight and aerobics in designated places within the parks.
- Provide the water element, whether in the form of fountains or lakes.

These gardens are naturally available for leisure facilities: restaurants, cafés, sports venues, children's places, educational and learning centers, training and development centers, libraries, meeting rooms, in addition to mosques and public WC. It is important to note that when designing these facilities, the sustainable environmental architectural design principles must be respected and followed.

IX. CONCLUSION

By incorporating all this information from a global experience, which has achieved the environmental sustainability standards in public green spaces, explained the benefits for the environment and society, and how to achieve a sustainable urban environment provided many ideas to solve the problem of lack of green spaces and places in the city of Tripoli. The city Centre is integrated into the urban fabric of the whole city.

Through all the information and ideas presented by the researcher, any designer can implement these ideas for planning and design and implement of Eco Park that serves the surrounding area in various aspects. The researcher has chosen one of these sites and is now carrying on in the process of designing and trying to implement the concept of these ideas and studies to be followed in the future .

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