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Relation Between Eco Urbanism and Cultural Landscape

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ABSTRACT: City growth and environmental difficulties last decades leads the art of urban design and development think more precisely and new approaches for conserving environment and developing urban areas have been evolved.The present study deals with concepts related to ecology in the city and in particular the theory of Ecological Urbanism and its criteria is expressed. Also theory and characteristics of cultural landscape is described. Persian traditional architecture and urban design especially in historic urban fabric has unique criteria, Shushtar ancient urban fabric is investigated in this research and its extraordinary characteristics are compared with theories mentioned above.This paper is based on quantitative and qualitative research methods reviewed recent and reliable articles and documents. Also case study is assessed by reviewing, historical books and different official documents in addition a complete assessment of case study is performed by site survey, socioeconomic survey, physical survey, and demographic analysis. Plenty of data gathered by questionnaires, interviewing officials, authorities and residents. Result came out from comparison theories and case study indicates that Shushtar has both ecological urbanism and cultural landscape values and it could be argue that cultural landscape are special features of the culture, art and relation between human and nature in each society, they were existed long before the eco urbanism criteria formed, yet, it seemed there are some similar criteria to define them that illustrate the inseparable fact and relation between them.

Keywords: *Ecological urbanism, Cultural landscape, Ecocity.*

INTRODUCTION

It is widely acknowledged that urbanization presents one of the most urgent challenges of the 21st century. The majority of the world's population now lives in cities. As they are currently built and operated, these centers are a growing drain on the earth's living systems and are the major source of greenhouse gases and other urban conditions impacting climate change. Cities, towns and villages must act swiftly and decisively to become more energy and resource efficient, more self-reliant in meeting their needs, less polluting and increasingly sustainable if we are to create conditions for a healthy and enduring human civilization on Earth.

Looking more closely to city growth last decades and environmental difficulties leads the art of urban design and development to think more precisely and new approaches for conserving environment and developing urban areas at the same time has been evolved, for instance smart growth, compact city, landscape urbanism, eco village and ecological urbanism and so on.

Also cultural landscape theory and term is partly based on cultural heritage and man mad built environment .As I discussed in this paper ecological urbanism is a wider realm to illustrate future cities, and I also mention that there is a close relation between cultural landscapes and eco urbanism approach.

Eco village: Human scale, full-featured settlement, in which human activities are harmlessly integrated into the natural world, in a way that is supportive of healthy human development and can be successfully continued into the indefinite future .This definition of Eco Village from 1991 is still used world-wide as a starting point for dealing with the complexity that such communities represent. At their heart, traditional Eco Villages are what happens when groups of concerned people want to demonstrate through their lifestyles that we can do very much better in our ongoing relationships with our ecosystems and each other. To recognize this and work in this area, a developer needs to understand and share the nature of this concern, especially if planning to initiate Eco Village (or Cohousing) projects in a commercially-facilitated way (Gilman and Gilman, 1991).

Ecological urbanism: An approach which leads to create Eco cities. The Eco city approach to sustainable development seeks to maximize the possibility that cities can sustainably meet a majority of their needs from the natural capital of their own bioregions.

The first wave of Eco city-like initiatives emerged in the wake of the United Nations 'Earth Summit' held in Rio de Janerio in 1992 following the launch of the sustainable development program 'Agenda 21'.Today, "Eco city" projects have effectively gone mainstream, with dozens of cities around the world currently developing integrated urban planning and management programs that address social and ecological health. However, there has yet to be a concerted attempt to develop international standards to address the fundamentals of Eco city development and the urban condition from both a local and global, whole systems perspective. To understand cities in their wholeness and full potential is a perspective that can be served powerfully by International Eco city Standards.

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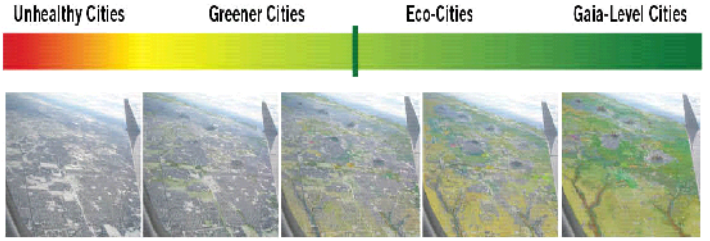

Fig. 1: Different city level (Source: Eco City Framework and Standards and Criteria, 2012)

Towards this goal, the International Eco city Framework and Standards (IEFS) initiative, launched in February 2010, is currently under development by United Nations accredited nonprofit Eco city Builders and an international committee of expert advisors.

The IEFS seeks to provide an innovative vision for an ecologically-restorative human civilization as well as a practical methodology for assessing and guiding the achievement of such vision through the lens of the Eco city (Eco city Framework and Standards and criteria, 2012) (Fig. 1).

Eco city Systems Hierarchy– Terms

Eco city: An Eco city is a human settlement modeled on the self-sustaining resilient structure and function of natural ecosystems.

The Eco city seeks to provide healthy abundance to its inhabitants without consuming more renewable resources than it replaces in its bioregion. It seeks to function without producing more waste than it can assimilate or recycle for new uses or than nature can dilute and absorb harmlessly, and without being toxic to itself or neighboring ecosystems. Its inhabitants' ecological impacts reflect planetary fundamental principles of fairness, justice, reasonable equity and Consensus at ample levels of happiness (Fig. 2).

Ecological Metropolis: An Ecological Metropolis, or "Ecopolis" is a cluster of Ecocities, towns and villages with open spaces between, which include waterways from large to very small streams, natural environments and agricultural and forest lands immediately adjacent, connected by public transit and bike-ped greenways.

Eco-Region or Bio-Region: An Ecological Metropolis occupies a portion of an even larger area, the Bio-Region or Eco-Region, which surrounds clusters of cities, towns and villages and their close-in open agricultural and natural environments and is characterized by a relatively consistent climate and population of species, often bordered by mountain ridges and/or or edges of water bodies.

Eco city Network: A typical Eco city functions within an Eco city Network a regional and/or global urban super system within which Eco city development is an adaptive process that supports the cultivation of localized urban strategies to best promote and advance the mechanism, institution, technology and culture for global sustainability according to ecological, economic and cultural principles (Eco city Framework and Standards and criteria, 2012).

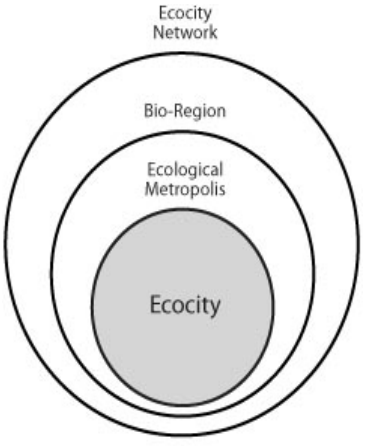

Fig. 2: Eco city Systems Hierarchy
(Source: Eco City Framework and Standards and Criteria, 2012)

Eco-city development and planning Key performance indicators

Healthy Ecological Environment
Good Natural Environment (air, water, native plants, wetland conservation)
Balance of man-made environment (green buildings, noise, carbon emission)
Social Harmony and Progress
Green trips
Domestic water consumption
Domestic waste generation
Dynamic and Efficient Economy
Renewable energy usage
Vibrant technology innovation
Comprehensive Infrastructures
Solid waste recycling and disposal
Provision of green space/recreational/sports facilities
Service network coverage (Tianjin ecocity indicators, 2012)

Cultural Landscape

Cultural landscape is a spatial form and the physical settings of the built environment which has been shaped and created by the common believe and activities of a particular society. It comprises both the built- and natural-environment which need to be studied simultaneously in the research procedure. It also comprises the dimension of spatial and temporal aspects in the settlement establishment process (Rapoport, 1969; Rapoport, 1990).

The Conceptualization of Cultural Landscape

Cultural landscape is expressed by spatial order, temporal, meaning, communication, activity, interaction, territory, cue, transforming, and systematic control base on completely idealism concept practice. Cultural landscapes are combination between manifest and element of nature that must be studied together, including considering settlement system, and the relations between location and housing (Rapoport, 1992; Rapoport, 1996). Moreover, geographer identified cultural landscape as the trace and evidence of the changing of land, topography and environment made by men from activities in their community lifestyle or ethnography that appear both in concrete and abstract characteristics (Junjira and Nopadon, 2010).

The Taxonomy of Cultural Landscape

The UNESCO categorized cultural landscape into three types. First, landscape is defined as what is intentionally designed and created by men such as garden, park, etc. Second, landscape as what has evolved as a result from changes in society, economy, administration, religion, and belief.
And finally, it refers to what is involved in religion, art and culture or natural elements. Cultural landscapes could be further categorized as historic sites, *historic designed landscape***,** historic vernacular landscape and ethnographic landscapes (Charles, 1992) (Fig. 3).

MATERIALS AND METHODS

This paper is based on quantitative and qualitative research methods. The present study deals with concepts related to ecology in the city and in particular the theory of Ecological Urbanism and cultural landscape, their criteria are expressed based on most recent and reliable articles and documents.
Also Southern Region of Iran, shushtar ancient city is used as a case study which is the unique example of Iranian traditional architecture and is listed as a UNESCO world cultural heritage. Historical books and documents, Iranian official reports such as Iranian cultural heritage, handicrafts and tourism organization reports, shushtar municipality reports, shushtar master plan and UNESCO report are used. In addition a complete assessment of case study by performing a site survey, a socioeconomic survey, a physical survey, and a demographic analysis has been made. also plenty of data gathered by questionnaires, interviewing officials and authorities, residents, photographing and drawing sketches of the area. In addition, data analyzed thoroughly then compared with case study characteristics with two theories criteria in a table, which led to some results mentioned in current research.

RESULTS AND DISCUSSION

Possible criteria for eco cities suggest the following ten criteria for defining eco cities (Van Dijk, 2010):
How does the city deal with energy issues? (Table 1)
How does the city deal with solid waste issues? (Table 2)
How does the city deal with transport issues? (Table 3)
How does the city deal with pollution issues? (Table 4)
How does the city deal with water related issues? (Table 5)
How does the city deal with sanitation issues? (Table 6)
How does the city deal with climate change issues? (Table 7)

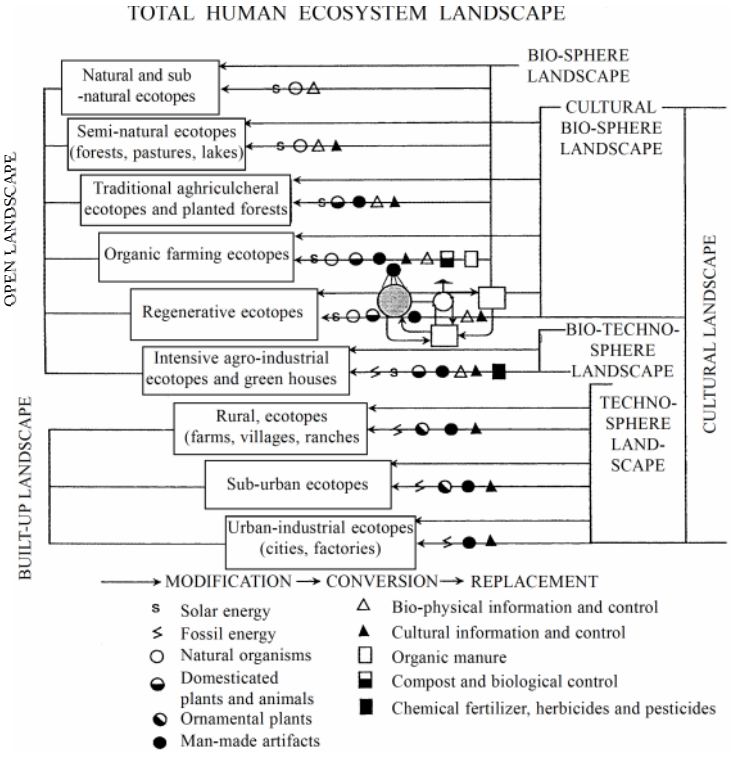

Fig. 3: Functional ordination of landscape ecotopes according to energy, material, and information inputs from the Biosphere and techno sphere poles. The achievement of a proper balance between these poles should become, with the help of restoration ecology, one of the major goals of landscape ecology (Source: Naveh, 1998).

How does the city deal with housing issues? (Table 8)
How does the city deal with sustainable urban development issues? (Table 9)
Does the city follow an integrated approach? (Table 10)

Case Study, UNESCO World Cultural Heritage

Shushtar Historical Hydraulic System, Iran (UNESCO, 2008). Shushtar historical urban fabric represented as a case study which known as cultural landscape but consist of eco urbanism criteria of their own time as well (Fig. 4).

Brief Description

Shushtar, Historical Hydraulic System, inscribed as a masterpiece of creative genius, can be traced back to Darius the Great in the 5th century B.C[1]
It involved the creation of two main diversion canals on the river Kârun one of which, Gargar canal, is still in use providing water to the city of Shushtar via a series of tunnels that supply water to mills.
It forms a spectacular cliff from which water cascades into a downstream basin. It then enters the plain situated south of

Table 1: Criteria for dealing with energy issues (Source: Van Dijk, 2010)

Criteria	Measurement
1.Efforts to limit CO2 emissions	Comparison with previous period
2. Stimulate energy management at household level	Policies with respect to energy management, for example promote city heating based on industrial heat
3. Reducing the greenhouse gas emissions from transportation	Policies with respect to greenhouse gas reductionand their results
4. Promoting energy saving in industry	Policies with respect to energy saving and results
5. Public transport on LNG	Percentage of vehicles using clean LNG
6. Promoting solar energy (sunboilers)	Policies with respect to solar energy and their results
7. Promoting the use of wind energy	Policies with respect to wind energy and their results
8. Allowing generated energy to be ploughed back in the network	Policies with respect to reselling of electricity andtheir results
9. Promoting heating and cooling based on underground water	Policies with respect to and their results, existence of temperature exchange projects
10. A relevant local initiative	

Table 2: Criteria for dealing with solid waste issues (Source: Ibid)

Criteria	Measurement
11. Efforts to limit the production of solid waste (reducing) households	Comparison with previous period
12. Integrated waste management	Policy documents
13. Re-using	Quantities involved
14. Recycling waste	Quantities involved
15. Go for waste minimization in production in industry	Quantities involved compared with previous periods
16. Constructing waste collection points	Number of collection points
17. Policies on hazardous waste	Policy in place and quantities involved
18. Policies on toxic chemicals	Policy in place and quantities involved
19. Involvement of the private sector in waste collection	Number of private operators and their role
20. A relevant local initiative	

Table 3: Criteria for dealing with transport issues (Source: Ibid)

Criteria	Measurement
21. Efforts to limit the use of cars	Policies and comparison with previous period
22. City accessible for everyone	Good public transportation system
23. Type of road infrastructure	Role of high roads, local roads and bicycle lanes
24. Promoting the use of bicycles	Cars deemphasized and surface for bikes compared to total space for roads
25. Promoting modal split (transit)	Possibilities to change to another transport system activities to limit congestion
26. Policies to limit congestion	Chapter on dealing with transport issues in an integrated way
27. Physical planning taking transport issues into account	Policy of extending the city or going for densification and its impact
28. Integrated urban design (Compact urban form)	Efforts to understand the relations between the Issues
29. Develop integrated transport policies	Policy and its impact
30. A relevant local initiative	

Table 4: Criteria for dealing with pollution issues (Source: Ibid)

Criteria	Measurement
31. Efforts to limit air pollution from households	Comparison with previous period
32. Efforts to limit water pollution	Quality of water
33. Efforts to limit soil pollution	Quality of the soil
34. Efforts to limit industrial pollution, (dealing with smog)	Different indicators for quality of ...
35. Efforts to limit noise pollution	Policy and its impact, number of decibels?
36. Efforts to limit other types of pollution	For example smell
37. Reducing intensive agriculture	Less fertilizers, pesticides or insecticides will be used
38. Reduce the city's foot print	Activities to limit environmental consequence
39. A livable city: quality of life index	An index developed for that purpose measuring quality of life
40. A relevant local initiative	

Table 5: Criteria for dealing with water related issues (Source: Ibid)

Criteria	Measurement
41. Efforts to close the water cycle	Integrated urban water management
42. Measures to deal with flooding	Comparison with previous period
43. Separate drainage and sanitation	In place?
44. Integrated water resources management	Practiced?
45. City promotes water demand management	Actual policies and their effects
46. Promoting rain water harvesting	Government policies
47. Using Sustainable urban drains (SUD)	Number of Suds?
48. Separate brown and grey water	Installation in place
49. Promoting urban agriculture	Surface, number of crops
50. A relevant local initiative	and role in local economy

Table 6: Criteria for dealing with sanitation issues (Source: Ibid)

Criteria	Measurement
51. Efforts to promote eco sanitation	Comparison with previous period
52. Produce energy out of sewer (bio gas)	Quantity of gas produced
53. Promote decentralized waste water treatment	Number of functional small decentralized treatment
54. Use eco-friendly or environmental technologies for water treatment	plants
55. Appropriate sanitation solutions	Use of wetlands for example
56. Developing sanitation value chain	Separate grey and brown water /non piped sanitation
57. Central treatment systems	Promoting local production, maintenance and use (compost, gas or energy)
58. Re-use of grey water on the spot	Number and their share
59. Collective facilities for communities	Separate pipes and afunctioning system
60. A relevant local initiative	Importance of this option

Table 7: Criteria for dealing with climate change issues (Source: Ibid)

Criteria	Measurement
61. Policy of climate mitigation	Activities and effects
62. Policy of climate adaptation	Activities and effects
63. Resources available	Compared to earlier period
64. Fair governance structure	Working in participatory way with stakeholders
65. Available technology	Use of adequate technologies
66. Adaptive capacity	Possibility to deal with issue
67. Leadership	Someone showing leadersh
68. Autonomy	Possibility to take decisions
69. Acting according to plan	Sticking to written down policies and activities
70. A relevant local initiative	

Table 8: Criteria for dealing with housing issues (Source: Ibid)

Criteria	Measurement
71. Efforts to promote isolation	Subsidies?
72. Reduction emissions from home heating	Comparison with previous period
73. City has eco-houses and neighborhoods	Examples
74. Separating waste at household level	Number of different products collected
75. Reducing the greenhouse gas emissions from the construction industry	Comparison with previous period
76. Using sustainable building materials	Comparison with previous period
77. The natural environment permeates the city's spaces	Houses built in a natural environment
78. Integrated housing systems approach	Relations between the issues is recognized
79. Space for recreational purposes	Play grounds, sport facilities, etc
80. A relevant local initiative	

Table 9: Criteria for dealing with sustainable urban development issues (Source: Ibid)

Criteria	Measurement
81. Efforts to promote sustainable urban development	Policy documents and policy impact analysis
82. Apply the Brut land definition of sustainability	Is current development at the expense of future Generations?
83. Protecting the natural environment	Tradable forest protection obligations
84. City has good public culture and sense of community	Citizen's activities and stakeholder participation in sustainability activities
85. Trying to change attitudes of actors	Campaigns
86. Promote ecological production	Government policies and incentives
87. Use zoning policies	Reserved use of space
88. Reserve green areas: in balance with nature	Green space in M2 as % of total space
89. Ecosystem rehabilitation activities	
90. A relevant local initiative	

Table 10: Criteria for an integrated approach to eco development (Source: Ibid)

Criteria	Measurement
91. Policy document developing an integrated approach	Operationalisation of such a policy
92. City integrated into the surrounding region	Collaboration and joint initiatives
93. Formulate objectives for justice and equality	Eco city also for poor people and middle classes
94. Emphasize the need to involve all stakeholders	Urban management as involving relevant stakeholders to implement
95. Planning for the future of the city is a visionary debate	Discussion and participation is organized
96. Promoting biodiversity	Policies and activities and their results
97. Promoting wild life	Policies and their results
98. Accountability towards stakeholders	Periodic reporting or consultation
99. Urban management philosophy	Integration is mentioned in policy documents
100. Relevant local initiatives	

the city where it has enabled the planting of orchards and farming over an area of 40,000 ha. Known as Mianâb (Paradise). The property has an ensemble of remarkable sites including the Salâsel Castel, the operation center of the entire hydraulic system, the tower where the water level is measured, damns, bridges, basins and mills. It bears witness to the know-how of the Elamites and Mesopotamians as well as more recent Nabataean expertise and Roman building influence.

Historical Description

The first irrigation water from certified channel systems in the region date back to the Elamite civilization (Chogha Zanbil region). They probably were themselves influenced by the work of large-scale irrigation began in Mesopotamia by the Sumerians.

Darius the Great, Achaemenid ruler of the early fifth century BC. BC had it repaired and Elamite irrigation systems and the creation of Dâriun channel assigned to the west of the current site Shushtar. Archaeological remains near the channel would tend to confirm. Darius and the Achaemenid rulers are also known for their hydraulic works, including Egypt. The building of the weir Shadorvan bar Kârun the river and allows passing. This bold work was performed by the second Sassanid emperor Shapur, in the middle of the third century AD[2].

The presence of Roman prisoners on the dam site, including the emperor Valerian himself, is evoked by a Persian source of the twelfth century.

It also indicates that the manufacturer Shadorvan be the engineer and architect of Roman origin Andimeshk. Influence of Roman civil engineering seems attested by certain aspects of the hydraulic system then in place. It is also likely that the hydraulic works of Petra by the Nabateans in the first century AD. BC, have influenced the diversion of a river in a rocky site using a dam and tunneling. Supplemented by the monumental intake Mizan upstream Shadorvan and channel Gargar, all hydraulic and then refounded amplified is intended to supply water to the new city of Tustar later called Chouster or Shushtar, and irrigate the vast semi-desert plain in the south, along the foothills last for a formal systematic agricultural development, including the establishment of orchards.

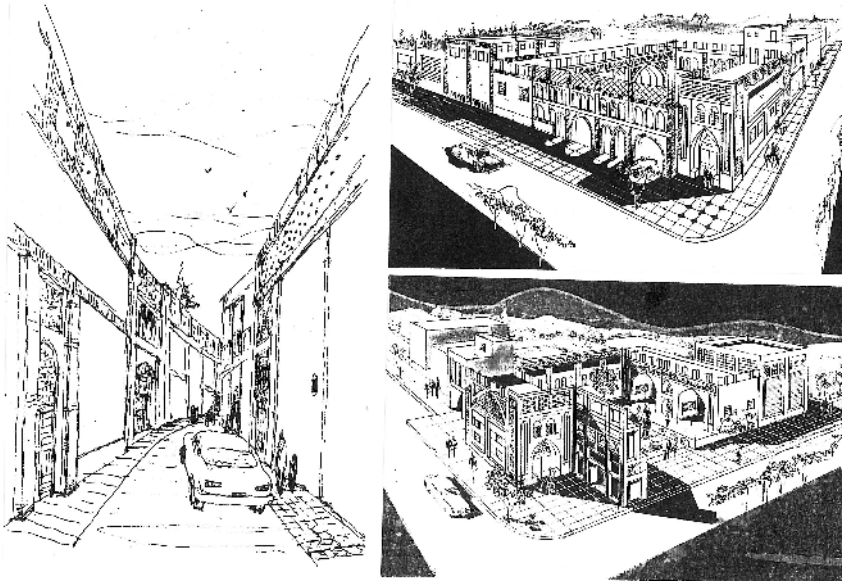

Fig. 4: Sketches of shushtar historical urban fabric (Source: Zista architecture and urban design consultant ,1992)

The Arab-Muslim sources attest to the reputation of the art Shadorvan book called Grand spillway and Wonder of the World. Although there is no explicit evidence for earlier periods, it is reasonable to think that this is a tradition dating back to the Persian origins of the building.

The book and the associated hydraulic system marked the minds of visitors over the centuries, to the Europeans in the nineteenth century. During the Islamic period, the various dynasties of Iran have carefully maintained the hydraulic system Shushtar as an essential element of planning. They have made significant maintenance and sometimes additional work, as the Safavids (1500-1700) and the Qajar (1779-1925), the bridge Gargar dam or weir Grand Shadorvan. The area of mills, its bridge-dam and tunnel has been built since the time of origin at least until the fifteenth century, and again in the nineteenth and twentieth century's (Fig. 5).

Outstanding Universal Value

Brief Synthesis

The Shushtar Historical Hydraulic System demonstrates outstanding universal value as in its present form; it dates from the 3rd century CE[3] probably on older bases from the 5th century BCE. It is complete, with numerous functions, and large-scale, making it exceptional. The Shushtar system is a homogeneous hydraulic system, designed globally and completed in the 3rd century CE. It is as rich in its diversity of civil engineering structures and its constructions as in the diversity of its uses (urban water supply, mills, irrigation, river transport, and defensive system). The Shushtar Historical Hydraulic System testifies to the heritage and the synthesis of earlier Elamite and Mesopotamian knowhow; it was probably influenced by the Petra dam and tunnel and by Roman civil engineering. The Shushtar hydraulic system, in its ensemble and most particularly the Shâdorvân Grand Weir (bridge-dam), has been considered a Wonder of the World not only by the Persians but also by the Arab-Muslims at the peak of their civilization. The Gargar canal is a veritable artificial watercourse which made possible the construction of a new town and the irrigation of a vast plain, at the time semi-desert. The Shushtar Historical Hydraulic System sits in an urban and rural landscape specific to the expression of its value.

Criterion (i): The Shushtar Hydraulic System is testimony to a remarkably accomplished and early overall vision of the possibilities afforded by diversion canals and large weir-dams for land development. It was designed and completed in the 3rd century CE for sustainable operation and is still in use today. It is a unique and exceptional ensemble in terms of its technical diversity and its completeness that testifies to human creative genius.

Criterion (ii): The Shushtar Historical Hydraulic System is a synthesis of diverse techniques brought together to form a remarkably complete and large-scale ensemble. It has benefited from the ancient expertise of the Elamites and Mesopotamians in canal irrigation, and then that of the Nabateans; Roman technicians also influenced its

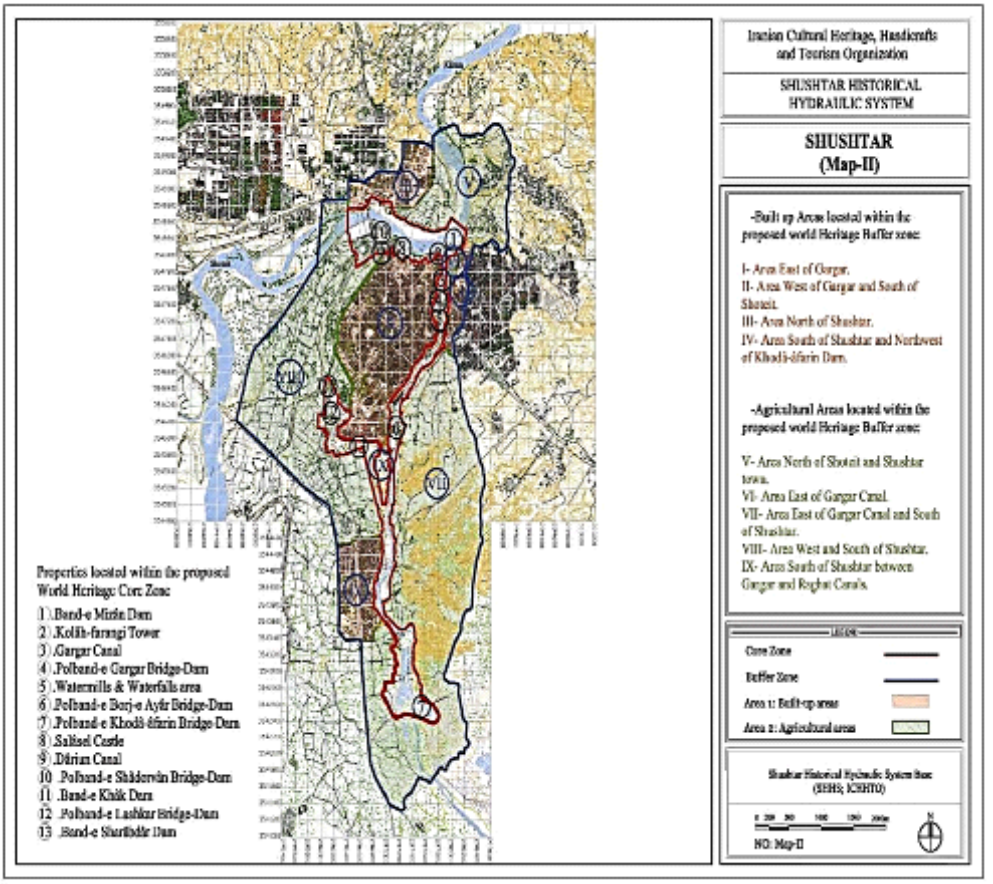

Fig. 5: Shushtar historical hydraulic system (Source: UNESCO, 2008)

construction. Its many visitors marvelled at it and were in turn inspired. It testifies to the exchange of considerable influences in hydraulic engineering and its application throughout antiquity and the Islamic period under the various Iranian dynasties.

Criterion (iii): Shushtar is a unique and exceptionally complete example of hydraulic techniques developed during ancient times to aid the occupation of semi-desert lands. By diverting a river flowing down the mountains, using large-scale civil engineering structures and the creation of canals, it made

Table 11: Relation between two theories and the case study (Shushtar)

	Ecourbanism criteria		Cultural landscape criteria	
	Healthy Ecological Environment	▲	Historic designed landscape	▲
	Social Harmony & Progress	▲	environment made by men from activities in their community lifestyle or ethnography	▲
	Dynamic and Efficient Economy	▲	relations between location and housing	▲
	Vibrant technology innovation	▲	Proper balance between Biosphere and techno sphere poles.	
	Comprehensive Infrastructures	▲		
	Stimulate energy Management at household level	▲		
	Promoting solar energy	▲		
	Promoting the use of wind energy	▲		
Shushtar ▲ Compatible ► Semi-compatible ▼ Not compatible	Promoting heating and cooling basedon underground water	▲		
	A relevant local initiative	▲		
	Efforts to limit CO2 emissions	►		
	Efforts to limit the production of solid waste (reducing) households	►		
	Policies on hazardous waste	▼		
	Involvement of the private sector in waste collection	▼		
	Efforts to limit the use of cars	▲		
	City accessible for everyone	▲		
	Integrated urban design (Compact urban form)	▲		
	Promoting the use of bicycles	▲		
	Policies to limit congestion	▼		
	A livable city: quality of life index	►		
	Efforts to close the water cycle	▲		
	Measures to deal with flooding	▲		
	Separate drainage and sanitation	▲		
	Integrated water resources management	▲		
	City promotes water demand management	▲		
	The natural environment permeates the city's spaces	▲		
	Integrated housing systems approach	▲		
	Space for recreational purposes	▲		
	Available technology	▲		
	City has eco-houses and neighbourhoods	▲		
	Using sustainable building materials	▲		
	The natural environment permeates the city's spaces	▲		
	Integrated housing systems approach	▲		
	Total : 37	compatible 27	semi compatible 3	not compatible 7

possible multiple uses for the water across a vast territory: urban water supply, agricultural irrigation, fish farming, mills, transport, defence system, etc. It testifies to a technical culture dating back eighteen centuries serving the sustainable development of a human society, in harmony with its natural and urban environment.

Integrity and Authenticity

The integrity of the hydraulic footprint is good, but its functional integrity compared with the original model is only partial and reduced, notably for the dams; it remains good for irrigation and water supply. The authenticity of elements reduced to archaeological remains is certain, but has been affected by 20th century works and materials so far as the civil structures and sites still in use are concerned. Efforts directed to the restoration of attributes that demonstrate authenticity must be pursued.

Information on the table shows that most of criteria which use to investigate if the city is ecologic or not are existed in ancient city of shushtar so we can call this historical heritage both cultural landscape and ancient eco city ,because it fulfill the ecological aspect and needs of its own time (Table 11)**.**

CONCLUSION

To sum up due to present research it could be understood that Case study Shushtar has an outstanding universal value, numerous functions, large-scale ecologic civil and urban design, Ancient homogeneous hydraulic system, designed and completed in the 3rd century CE for sustainable operation and is still in use today, Considerable influences in hydraulic engineering (creative and inspiring technology of their own time), Economical Multi-function urban structure, serving the sustainable development, Local materials used , Integrity and Authenticity are its extraordinary characteristics.

As illustrate in the table Shushtar has both ecological urbanism and cultural landscape values. Management and protection requirements should include improvement in terms of the interpretation of the sites and the involvement of the local population.

Taking everything into consideration, it could be argue that cultural landscape are special features of the culture ,art and relation between human and nature in each society ,they were existed long before the eco urbanism criteria formed, yet, it seemed there are some similar criteria to define them that illustrate the inseparable fact and truth between them .

So they could call ancient eco cities or eco villages, which has the same criteria as today's eco cities by considering those days condition. They had holistic approach and fulfill different kinds of human needs such as economy, environment, culture, art and so on.

As mentioned in current research shushtar a historical Persian city with its hydraulic system could stand for ecological urban design and also is a cultural landscape.

ENDNOTES

1- BC-Is an abbreviation for "before Christ"

2- AD- Is an abbreviation for "Anno Domini" is medieval Latin terms ,translated as in years of Lord

3- CE- Is an abbreviation for Common Era

REFERENCES

Charles, A. B. (1992). Protecting Cultural Landscapes Planning, Treatment and Management of Historic Landscapes . IOP publishing physics web: http:// www.nps.gov/hps/tps/briefs/brief36.htm.

Eco city Framework and Standards and criteria. (2012). Retrived from http:www.ecocity builders.com.

Gilman, R. & Gilman, D. editors. (1991) Ecovillages and Sustainable Communities: A Report for Gaia Trust. Context Institute; Bainbridge Island, WA.

Junjira, N., Nopadon, S. (2010). Determinant of cultural heritage on the spatial setting of cultural landscape. Procdia Social and Behavioral Sciences 5. IOP publishing physics web http://www.sciencedirect.com/science/article/pii/S1877042810016423.

Naveh, Z. (1998). Ecological and Cultural Landscape Restoration and the Cultural Evolution towards a Post Industrial Symbiosis between Human Society and Nature. Restoration Ecology, 6(2), 135-143.

Rapoport, A. (1969). *House Form and Culture*. Englewood Cliffs, NJ: Prentice-Hall.

Rapoport, A. (1990). *The meaning of the built environment. A nonverbal communication approach*. Tucson, University of Arizona press.

Rapoport, A. (1992). On Cultural landscapes. *Traditional Dwellings and Settlement Review*, 3(2) (spring), 33-47.

Rapoport, A. (1996). Culture and built form-a reconsideration" (pp.157-175). D.G.Saile(ed) Architecture in Cultural changes: Essays in Built Form and Culture Research. Lawrence: University Press of Kansas.

Tianj inecocity indicators. (2012). Retrived from www.Tianjinecocity.gov.sg

UNESCO. (2008). World Heritage Convention Nomination of Properties for Inclusion on the World Heritage List, Shushtar historical hydraulic system, report.

Van Dijk, M.P. (2010). Beijing and Rotterdam Eco cities??Using 100 Criteria for a classification of ecological cities?. Knowledge Collaboration & Learning for Sustainable Innovation ERSCP-EMSU conference, Delft, The Netherlands.

Zista architecture and urban design consultant. (1992). Comprehensive restoration plan of historic urban fabric of shushtar.