

CASE STUDY

Environmental planning and management of urban natural landscapes

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ABSTRACT: Advantages of urbanization such as access to clean water, health, and overall easier life in cities, as well as the disadvantages or its negative effects on environment cannot be ignored. Today, there are numerous environmental problems due to the reduction in ecologically valuable places within urban areas. Bringing nature to the cities appears to be essential to enhance urban environment and to reduce environmental problems in urban communities. In fact, issues resulting from the idea of “sustainability” as a policy-making goal require an integrated environmental policy-making approach. The innovations of new environmental policy-making require policy-making mechanisms that can deal with interdependent characteristics of environmental problems. To this end, new structures have emerged known as Environmental Planning and Management and Strategic Environmental Planning and Management. This analytical – descriptive article aims to re-examine the origins and concepts related to Environmental Planning using a field and desk study. With the introduction of urban natural landscape, Environmental Planning considers such spaces within the city. In this regard, Khoshk River, Shiraz, Iran, as an urban natural landscape, was analyzed. Environmental Planning-based policies were proposed to improve quality of the place under discussion.

KEYWORDS: *Environmental planning and management (EPM); Khoshk River of Shiraz City; Urban natural landscape; Sustainability*

INTRODUCTION

In recent years, urbanization has faced a rising trend so that the urban population increased by almost 100% at the couple of decades of the last century which encompasses almost 45% of world's population. In addition to advantages such as access to clean water, health, and overall easier life in cities, negative effects of urbanization cannot be ignored on environment. Today, there are numerous environmental problems due to the reduction in ecologically valuable areas within urban areas. Nature appears to be essential in urban environment in order to reduce urban environmental problems. Environment consists of natural environment

and human-made ones. Natural environment has always provided the context of human activities. These activities, therefore, are effective on the quality of natural environment. Hence, any changes in the natural environment affect human environments directly or indirectly. There are two extreme views on man's relationship with nature. At one end, man-centered human who is oblivious to evolutionary history and unaware of man and his friends and allies destroys everything. The other view is less certain regarding the position of human. Reversing the right, this attitude justifies that human not only is a unique type of creature but also has unequal level of intelligence and self-awareness. Such a man, who is aware of his past

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and his unity with everything, follows respect aspired by understanding. He also seeks his creative role.

With an emphasis on the second view point, we must acknowledge that this man arising from nature calls peace for his tired and anxious soul and seeks his lost identity only in a natural landscape which is the obvious and clear manifestation of emotions and culture. Connection with nature synchronizes us with life cycles and rhythm, the change of seasons, and the tides or the life cycle of plants and animals (Bell, 2015; McCormick and Athanas, 2008). The natural context has always formed the culturally valuable centers of civilization. Unquestionably, any disturbance in this context also threatens the nature of the formed symptoms. More extensively, the disturbance of relationships between the natural and cultural landscape threatens the hidden values in both sides.

On the other hand, some planning experts have introduced a new EP approach. They believe that "Environment" is not fragmented, so, the policy that is supposed to deal with it cannot be fragmented. Therefore, "Environmental Planning" is a general and integrated approach to deal with the environment beyond the traditional, professional, and administrative borders directing toward guaranteeing long-term goal of environmental sustainability. It is placed next to other elements such as energy policy-making, waste management, water resources management, and pollution control. Although the importance of land use and other important aspects of traditional approaches are not denied in EP approach, it is not considered the only important element because the EP followers believe that no profession or group can claim to have completely inhibited the planning process.

With focus on common point in village, city, and nature, Environmental Planning and Management (EPM) follows integrated planning and management and its surrounding area. Therefore, it covers three fields: Rural Planning, Regional Planning, and Urban Planning. Therefore, this article aims to review environmental planning-related concepts using analytical-descriptive research method and literature review. Then, it studies the role of EP in restoring and enhancing the natural scenery of urban seasonal rivers.

MATERIALS AND METHODS

Natural Landscape as an Environmental Element

A natural landscape is the original landscape that exists before it is acted upon by human culture (EPA, 2003). According to this definition, *Natural Landscape* is not influenced by human activities and it is untouched

and pristine so that all living creatures and its natural aspects are free to change and move. Natural Landscape might only consist of non-living elements, living creatures, or both. Natural Landscape has historically been controlled by natural flows and it is out of human's interference (Masnavi *et al.*, 2007). Natural Landscape is, in fact, the interplay of the forces that have created it. Its context has been extended prior to the human presence. Although finding a place on earth that is not affected by human presence is almost impossible, any place which is left behind or human activities are removed in such place can restore to its natural landscape. The word "semi-natural" refers to places modified by human influence but retained many natural features (Fernandes, 2000; Andrews, 2004). In contrast to this point of view, another opinion defines human being in close contact with natural landscape and raises the following question: can we intentionally change the environment in a way that is more deserving of humans and other living things in the world? (MacHarg, 2007) In fact, landscape, more or less, requires human intervention in order to be natural. Meanwhile, in order to obtain valuable things and products from the nature, it is essential to work in line with the nature and not against it (Bell, 2015). Natural landscapes are the contexts for human life. They are effective in shaping the civilization's cultural identity and are the source of human inspiration (Irani Behbahani and Shafee, 2007; Hansen, 2010).

It is claimed that defining the very complex word of "nature" leads to the creation of definitions for "utilization", "preservation", and "restoration" (Irani Behbahani and Shafee, 2003; Mcneely and Harrison, 1994). Two opinions, in fact, are in contrast to each other. On one hand, one attitude praises nature devoid of human presence and believes that "whatever touched by people will ruin" (Spirn, 2005). On the other hand, the second attitude supports the presence of human next to the nature as its supporter and even sometimes savior. According to this point of view, nature can be monitored by enhancing knowledge, understanding the natural landscape, and avoiding greed. Today, redefining the word "nature" and its relationship with the role of human appears to be essential due to the extent of destruction and unlimited exploitation of man from the nature. Human, in fact, needs to take special responsibility for the conservation and wise management of wildlife habitats which have already been destroyed by various factors (United Nations,

1972). Furthermore, nature conservation is very important as the source of life, context, educator, holy home, the context of challenge, and more importantly, unknown companion recovery, and the source of meaning (MacHarg, 2007; Khorasani Zadeh, 2003; Parvinian, 2003).

Environmental Planning and Management Roots of EPM in Urban Planning

EP is one of new topics for the appropriate and sustainable use of land facilities and possible environmental prevention which has recently been taken into account (Al Sheikh *et al.*, 2009). Concerning the roots of such planning in urbanization and urban planning, it is claimed that urban planning is mainly rooted in social reform. As a result, two objectives are taken into account including higher social equality and higher level of citizens' participation in decision-making processes. Therefore, various international conferences and in particular Earth Summit have enlivened the equality and democratization of decision-making questions. Two terms, *Equality* and *Participation*, became a part of New Environmental Agenda in national and international levels. In this document, Capacity Building is highly regarded. "social equality" and "people's participation and decision-making democratization" have gained an important role in environmental policy making after they were taken into account in the Earth Summit. Most authorities, politicians, and decision makers consider them the main elements of "sustainability" in international level. Although "social equality" and "democracy in decision making" are considered the main elements of "sustainability" and "environmental planning" by environment supporters, social groups that take advantage of political and economic power, they are not forced to surrender based on environmental altruism at local, national, and international level (Abdi Daneshpour, 2008; Wheeler and Beatley, 2005; Prank and Ul-Haq, 2001). Based upon UNESCO definition of environmental development, two dimensions are considered including the recognition of the role of people in development process and endogenous necessity of development process (Bahram Soltani, 2008). In this regard, four main principles are introduced as justification of the need for EP in land development and urban planning. The first principle forms the basic foundations in land use that, wherever possible, first-grade agricultural lands, as a natural resource highly

regarded as the highest value to society in long term, need to be maintained. Even if the current demand for food does not require the preservation of such lands, this principle will remain unchanged because it is impossible to forecast the future of food supply and population growth. The second principle is associated with the *need for healthy water*. This means that water resources, wherever they are, need to be preserved as a vital and scarce source for human life. The third principle is the *need for clear air* in order to avoid the exposure to the development of various diseases. According to this principle, not only toxic chemicals released into the air need to be controlled but also any possible strategy needs to be used in order to reduce air pollution and clean the air naturally such as using dense vegetation. The fourth principle is *shelter*. Considering growing population, efforts need to be made to accommodate people based upon their lifestyle. In today's world, such measures raise the economic and social support of the poor guaranteeing of land-use planning, social and economic planning in order to ensure the fact that decisions meet the needs the best possible way (Beer and Higgins, 2013).

Framework of EPM Activities and Basic Concepts

Imposing environmental criteria in urban designing can lead to major changes in the structure, texture, appearance, and quality of the environments (Carmona, 2003). It also enhances the urbanization knowledge. The objective of environment is to create human and human-oriented cities, designed and built to live, work, relax and finally the manifestation of human talents (Bahram Soltani, 2008). Therefore, Resource and EP became the main type of planning when the nature was the center of social concern. These planning activities were institutionalized with the establishment of new and voluntary organizations to preserve the environment at local, national, and transnational levels using rules and regulations concerning the clean water and air. EP is based upon ecological imagination which is a sub-group of Ecological Planning. Like other sectorial planning, EP has a similar planning process. Experts and natural scientists such as pathologists, petrologists and botanist are required to analyze the status quo, detect constraints, threats, potentials, opportunities, and resources, and help forecast the consequences of human intervention in natural structure; however, environmental planners need to design and implement such integrated plans and

change them into strategies and recommendations in line with policy making in public sector (Abdi Daneshpour, 2008). The Fig. 1 has demonstrated the principles of environmental planning.

Like other technical aspects, environment acts in two dimensions: Inter-sectorial and Sectorial. In inter sectorial dimension, environmental thought flows into other sectors and affect the designing process. Such effectiveness usually lacks spatial needs (Bahram Soltani, 2008). EP covers a wide range of fields in different organizations within the legal frame. EP fields are 1. To detect areas in environmentally critical conditions or they are unique such as natural naturally preserved areas or lands exposed to floods and other natural disasters and 2. To locate activities that destroy the natural environment such as nuclear power plants, landfills, and high-voltage power lines. Environmental resources consist of energy, taken into account since 1973, jungles, agricultural lands, oceans, and seas. They are both the agenda in public planning and policy making. Environment has become a globally important and political issue. The world has reached a stage concerning the relationship between environment and society in which economic, social, political, and cultural changes occur in response to both environmental changes and prevention of factors threatening the survival of human beings. EP covers a wide range of planning activities such as reducing air pollution, reducing water pollution, and waste disposal. In most

countries, Environment Impact Statement (EIS) is obligatory for planners to integrate environmental issues and other fields of planning (Abdi Daneshpour, 2008).

EPM Main Objectives

Environmental protection is only helpful when it is able to prevent problems in the future, acts as national development driving force, and is actively involved in all planning levels from the beginning to end. This is achieved when environmental protection is highly regarded in national planning system and sectorial planning moves toward integrated planning (Bahram Soltani, 2008; Leitman, 1999).

Concerning EP objectives, it is considered for endogenous and sustainable development. Human is the basis of development not increased number of industrial units, number of personal cars, or expansion of luxury urban areas. In such planning, the main development policies are targeted to meet the basic needs of society and in particular the weakest layers of society. Based upon this objective, other goals are reliant on national resources, orientation in line with meeting the basic needs of society, the use of compatible technology with environment, supporting technology and small-sized techniques, and the users (Bahram Soltani, 2008). Sachs believed in three main topics for environmental development: (1) Independence and sovereignty of natives in decision-

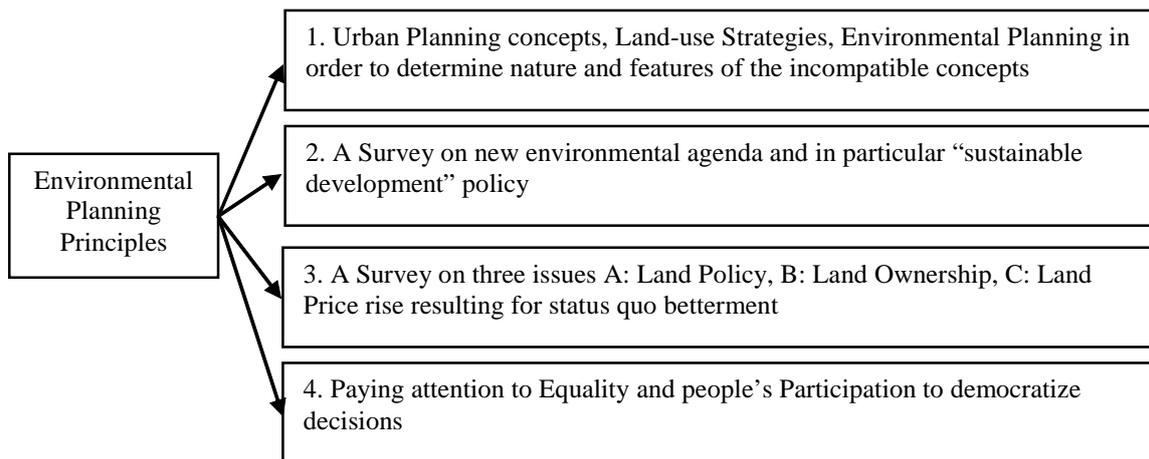


Fig. 1: Environmental planning principles (Abdi Daneshpour, 2008)

making and the search for native style that are specific to historical, cultural, and ecological fields; (2) Fair recognition and satisfaction of human needs relying on the meaningful and purposeful entity; and (3) Observing ecologic possibilities which means search following the development in harmony with nature (Sachs, 1996). These objectives are to correlate local, national, and global levels, identify socioeconomic groups and environmental topics, and detect the equality and democratic participation.

▪ **First Objective: Conservation of resources**

Guaranteeing the supply of natural resources for existing and future generations through efficient use of land, less non-renewable resource waste, and protection of biological diversity

▪ **Second Objective: Constructed space development**

It is mainly engaged with land-use planning process. This objective means development protection and use of constructed environment which is in harmony with natural environment and is respected. Meanwhile, the relationship is based on a balanced and advanced feature

▪ **Third Objective: Environmental Quality Enhancement**

This objective is based on EP which focuses on impacts borders and forecasts the environmental condition. This objective is based on the following statement: to prevent or reduce processes which lead to environmental pollution along with capacity maintenance of ecosystem regeneration and development prevention which reduces human health or reduced quality of life

▪ **Fourth Objective: Social Equality**

This objective requires definition for feasibly alternative and politically acceptable approaches. Applying such approaches change the consumption patterns, resource allocation, and accordingly behavioral, value, and life style patterns. This objective encourages preventing the development which increases the gap between the poor and rich and reduces social inequality

▪ **Fifth Objective: Political Participation**

This objective believes that fundamental changes are possible only with people's awareness, change in values and behaviors through encouraging participation in political decision making in environmental reform at all levels from local to national and transnational levels (Abdi Daneshpour, 2008; IUCN, 2009).

Resources and Features and EP Process

EP points out to different stages of water, soil, and plant resources which appear to be essential in policy

making for managers. These stages include the identification of problem, setting policies, and planning. In other words, two strategies are taken into account in EP: Policies that are adopted in response to a crisis and Procedures associated with development planning (Shayan *et al.*, 2005). Procedures, plans, and problems are applied in different time scales covering a wide range of factors and conditions. EP process might be micro, medium-size, and macro scales covering short, medium, and long-term periods (Ahmadi, 1998).

EP is a modern strategy for urban planning where key resources and areas are identified. Then, they are maintained against uncertainties created by "market" or unplanned and competitive processes. These resources are two types: (1) Financial resources: will be limited due to economic downturn (both private and public financial resources) because urban planners have to seek other resources including voluntary innovations. (2) Environmental Resources: connects "sustainability" and "quality of life". Therefore, EP has the following features: A- Multiple Beliefs: One declared feature of EP is the emphasis on multiple-belief planning in order to strengthen equal opportunities and support disadvantaged groups by market forces. B- The continuous use of planning mechanism: EP followers believe that it is a better choice than reliance on market forces. C- Urban Planning flexibility and encouragement within EP frame: EP not only makes planning flexible but also facilitates development. D- The need for vision and strategic planning: in economic downturn, movement is intensified toward ideals and imagination. EP raises the need for intellectual and stronger bases. E- Paying attention to "Sustainable Development" and "Public Participation": EP requires being in line with the bases of sustainable development and democracy in decision making. F- Insist on public sector: market globalization and international nature of environmental problems being experienced by human lead to a Common Global Agenda. Planners will work in future worldwide concerning an ambiguous field where there is an overlapping between government, market, and voluntary institutions (Abdi Daneshpour, 2008).

Concerning the EP process feature, the following characteristics are pointed out: first, EP's Trans-Media feature such as different types of pollution including air, water, and soil pollution. That is why EP requires to integrate land-use planning functions formerly separated. Second, EP's Trans-sectorial feature: they ignore

traditional policy-making borderlines such as agriculture, industry, energy, transportation, and construction. On the one hand, they have dramatic environmental consequences, leading to resource depletion and pollution. On the other hand, the emphasis of policy making is production. Third: EP's Trans-Boundary feature: the effect of resource depletion and EP loss pass

political boundaries in all geographical and administrative levels. Vertical integration is required at all levels of governments in order to coordinate and harmonize the actions in one level with other levels (ibid). The Fig. 2 has shown the ecological planning model and in the Fig. 3, the basic environmental planning process was introduced.

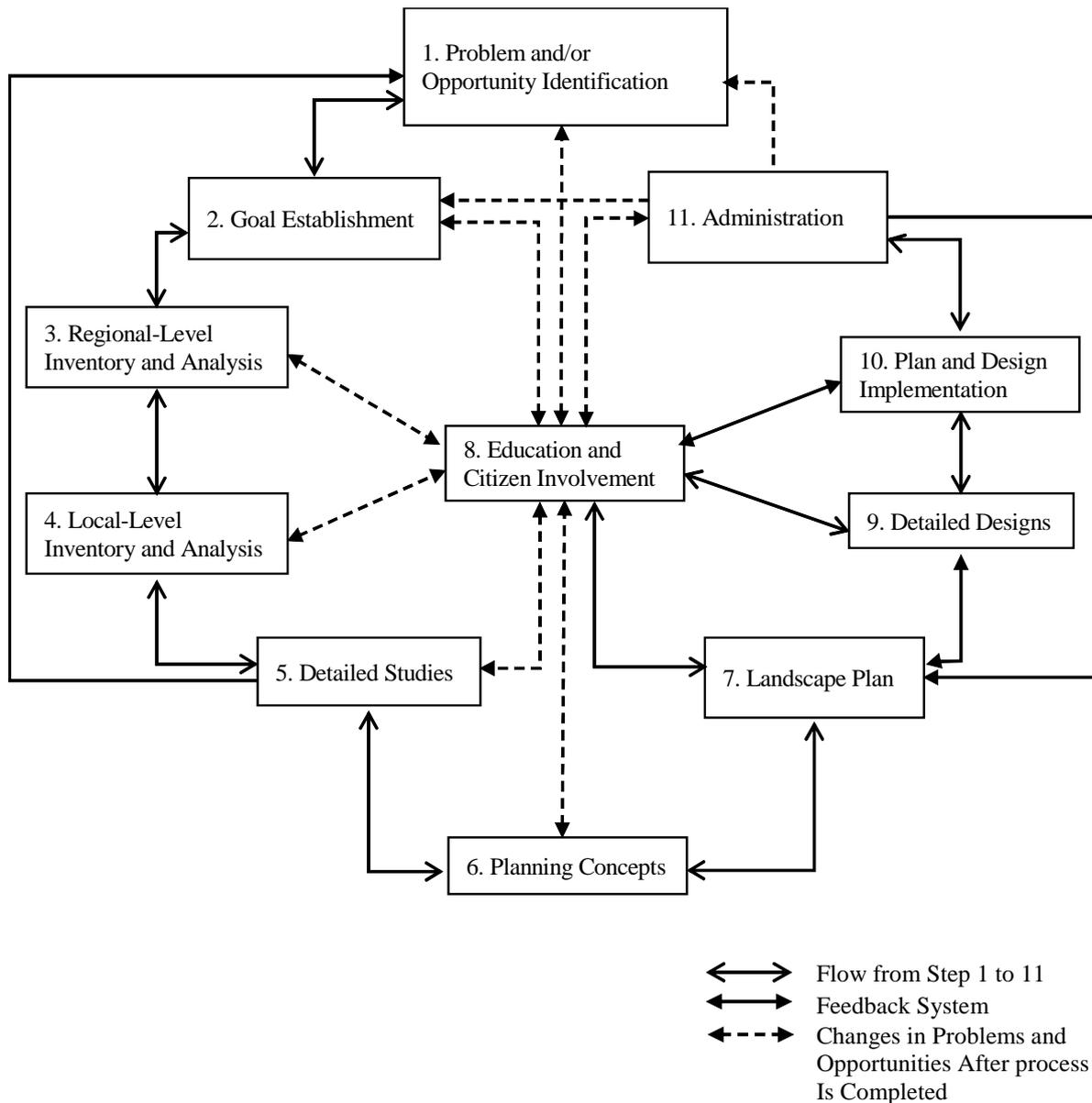


Fig. 2: Ecological Planning Model (Steiner, 2000)

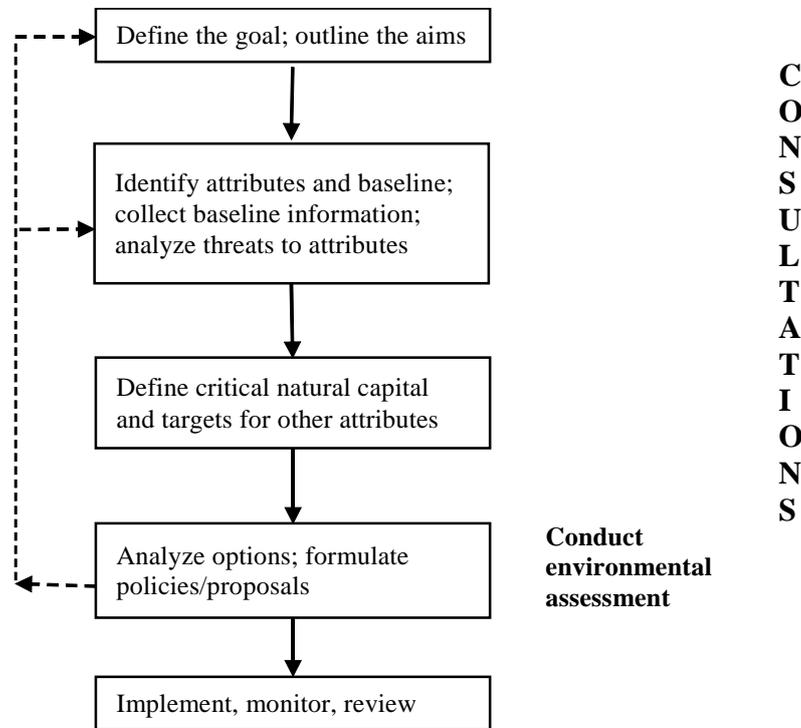


Fig. 3: The basic Environmental Planning Process (DTA/CAG, 2000)

RESULTS AND DISCUSSION

The Khoshk River is a seasonal river that passes through the city of Shiraz in a northwest to southeast direction. The river originates in the Shool and Kalestan mountains (2,990m high). After joining the Nahre-Azam and Tang-Sorkh rivers, the Khoshk River ends in Maharloo Lake (Eshragh, 1972; Kami Shirazi, 2000). It is essential to note that the path of the Khoshk River has been denatured into a direct line by the stone walls built on its sides, contributing to an increase in the linear speed of the river water. The discharge of the river significantly decreases in dry seasons of the year, especially in the summer. Khoshk natural riverbed and its natural riparian zones are the most superior natural and outdoor potentials. If this vast outdoor space is correctly organized and synchronized with human needs, not only it restores the Shiraz environment destruction but also it can provide the mental peace in a live, dynamic, and social context for the visitors. This zone is now engaged

with some problems such as the loss of animal and plant species, erosion, severe noise and environmental pollution, uncontrolled presence of cars, factories and industries in the vicinity of the river, waste water, and municipal waste in the natural environment. Along with culture building concerning regional environment conservation and promotion by visitors, some measures are recommended including the removal of incompatible land use with natural processes, water storage in high rain seasons by erecting water and soil dams in different points for the permanent presence of water in all seasons, motivation encouragement for the interaction with nature. Designing social, cultural, and recreational events can help the promotion of natural river bank. It is obvious that this is only possible by respecting cultural and native traditions and using EP solutions. The Tables 1 to 4 have demonstrated the integrated analysis of various aspects of the Khoshk River.

Environmental planning of urban lanscape

Table 1: Integrated analysis of the environmental dimension of the Khoshk River

Integrated analysis of the environmental dimension				
Topic	Strength	Weakness	Opportunity	Threat
Natural Elements	Presence of environmental elements such as rivers, vegetation	Water Pollution in some areas	Opportunity to create a variety of spaces with various natural elements (water, trees, rocks, etc.)	Destruction of natural elements resulting from non-compliance with ecological standards
River Bed	-	No Clarity of natural riverbed form	Converting this abandoned area into a beautiful river	Progressive destruction of area and becoming driving area
Riverside Landscaping	-	Abandoned Areas and lack of green space	Natural landscaping capability along the river and regional beautification	Ugly and in appropriate views In the region
Flooring	-	Cover many surfaces with hard coating	Using appropriate soil to grow vegetation in river floor and soft flooring	-
Link with the surrounding green space	-	Green space only on the edge of the river	-	-

Table 2: Integrated analysis of the spatial dimension of the Khoshk River

Integrated analysis of the spatial dimension			
Strength	Weakness	Opportunity	Threat
Overall defined frame work for space	-Lack of appropriate organization of spaces -No conformity of mass and space	Some nodes and elements along the axis to create different fields	- Fragmentation and incoherence of the masses - Destruction of outdoor and green spaces
Ability in Geometric proportions of space	-Lack of Functional Mapping of Spaces -Inattention to the order of defining dynamic and static spaces -Lack of human scale -Incompatibility between land and residential uses	Creating micro-spaces in general fields	Lack of coherent design in order to enrich the precious natural spaces and gardens
-	- Design Mismatch between micro-spaces and the overall atmosphere -Inattention to natural form of river bed in designing edge	-	Unplanned land use change especially to residential use

Table 3: Integrated analysis of the visual dimension of the Khoshk River

Integrated analysis of the visual dimension				
Topic	Strength	Weakness	Opportunity	Threat
Natural elements of landscape	favorable natural scenery (water, vegetation)	Lack of appropriate organization of natural and artificial landscapes	Many strategic points to create landscape (appropriate visions)	Obstructing and interfering with the synthetic elements
Physical elements	-	Inappropriateness and disharmony of walls and floors (materials, colors, etc.)	-	Lack of thematic designs
Available Spaces	-	- Poorly designed visual spaces to create optimal visual proportions - The lack of visual sequences along the river	-	-
Intervening factors	-	Visual interference due to the presence of cars in space	-	-

Table 4: Integrated analysis of the perception dimension of the Khoshk River

Integrated analysis of the perception dimension			
Strength	Weakness	Opportunity	Threat
-The presence of river in people's imagination - Closeness to perceive the space -Some distinguished features such as Chamran and Zargari Bridge	- Lack of feeling of being next to water (river) as an element of space identity -Lack of experiencing the feeling of location (not understanding the features of location) - Lack of space sequences (lack of coherence in the understanding of space) - Lack of priority to pedestrians in understanding space - Lack of emphasis on existing indicators (such as bridges) for space readability - River detachment from the urban texture	The opportunity to create readability using edge element (River)	Obstruction and confusion in understanding space with the synthetic elements

Also, Table 5 has shown the recommendations for future organization and planning of Shiraz Khoshk River.

CONCLUSION

Considering the replacement of the traditional planning methods (comprehensive-rational planning) with incremental approaches in most countries, Strategic Environmental Planning and Management (SEPM) defined three fields including A-Strategic Thinking and action B- Making a participatory process, and C- incremental method of practicing. In terms of urban landscape EP, it is claimed that nature and landscapes, whatever meaning they have, need to be the center of decision making and designing due to their values. Appropriate and correct planning and designing mean to objectify the possible uses of the concerned areas.

In conventional approaches of EP and design, most cross-sectional information compared with the status quo is analyzed within some factors including things, direction, topography, soil, vegetation, etc. Then, plans are offered based upon them for a certain period of time. In this approach, time and its consequences are

not considered in growth patterns or environment change in EP design and planning. As a result, the certain nature of this approach conflicts with that of constantly changing EP, leaving dramatic effects on the fulfillment of planning objectives. The weaknesses and shortcomings of such attitude lead to the use of strategic approaches to identify, analyze, and plan decisions intertwined with time and changes resulting from this connection. In this regard and considering the status quo, it is claimed that the latter approaches are based on chaos and complexity theory and follow to identify and realize the rules governing the growth and changes of phenomena during the period of time in order to offer a more comprehensive and flexible overview toward environment, phenomena, and pattern of changes.

This article aims to use chaos and complexity theory in a natural context for EP plan and design in order to analyze the environment. This way environmental patterns and the trend of their emergence are analyzed. Since landscapes are important parts of our surroundings, landscape EP is considered an informed attitude toward environment and nature that is formed

Table 5: Recommendations to organize natural landscapes of Khoshk River, Shiraz, Iran

Macro-Objectives of Natural Landscape EPM	Natural riverbed EP strategies and management
Reconstruction and restoration of riverbank as a living creature	<ul style="list-style-type: none"> -Public access to water edge as a project indicator -Encouraging riverside path as a daily and recreational route - Providing a variety of land uses along the edge of the water (from park to refreshing and interesting cultural, recreational and commercial activities) - Providing nightly activities along with daily activities as well as special places for children along with adult spaces - Equipment for public art - Adding spaces for special events along the river -Enriching spaces with recreational equipment which supports the relaxation, picnic, observation, etc. -erecting trails by increasing the separation gap between cars and pedestrians in order to enhance the safety of paths
Maintaining, improving, and enhancing the awareness of river's biological and ecological resources	<ul style="list-style-type: none"> -Restoration of natural habitats -Creating accessible and more usable green space along the river -Raising awareness of the river's natural resources through public education programs, signs and -Re-protecting an re- improving the features and performance of the natural river -Looking opportunities to restore riparian -Creating an integrated visual system at water's edge -Creating landscape along the trails -Controlling height and orientation of buildings, in order to maintain the aesthetics of the river from the city
Enhance the visual quality	<ul style="list-style-type: none"> -Placing the main façade of buildings next to riverside toward the river and outdoor space toward the riverside -Trails overlooking the river

by relying on protective factors of environmental and spatial values in order to promote ecological, social, economic, and cultural ability of each region. Landscape EP is an informed process of organization, planning, and physical change in environment and nature. Landscape EP is the creation of attractive, exciting, meaningful, and sustainable environments and views. Therefore, landscape EP is first considered the factor to create harmony among ecological, technological, and cultural factors. This design might be performed similar to the

nature which finally leads to the creation of landscape, reflecting a clear manifestation of nature (Fig. 4).

In this case, the designed landscape is a long-term process which finally leads to sustainability; however, a balanced and complex ecologic system is not created. Therefore, nature is the main theme in natural landscaping divided into two sections:

1. Principles related to ecosystem's spatial landscape: for instance, considering the shape and vastness of spots, avoiding fragmentation of the habitat, link and

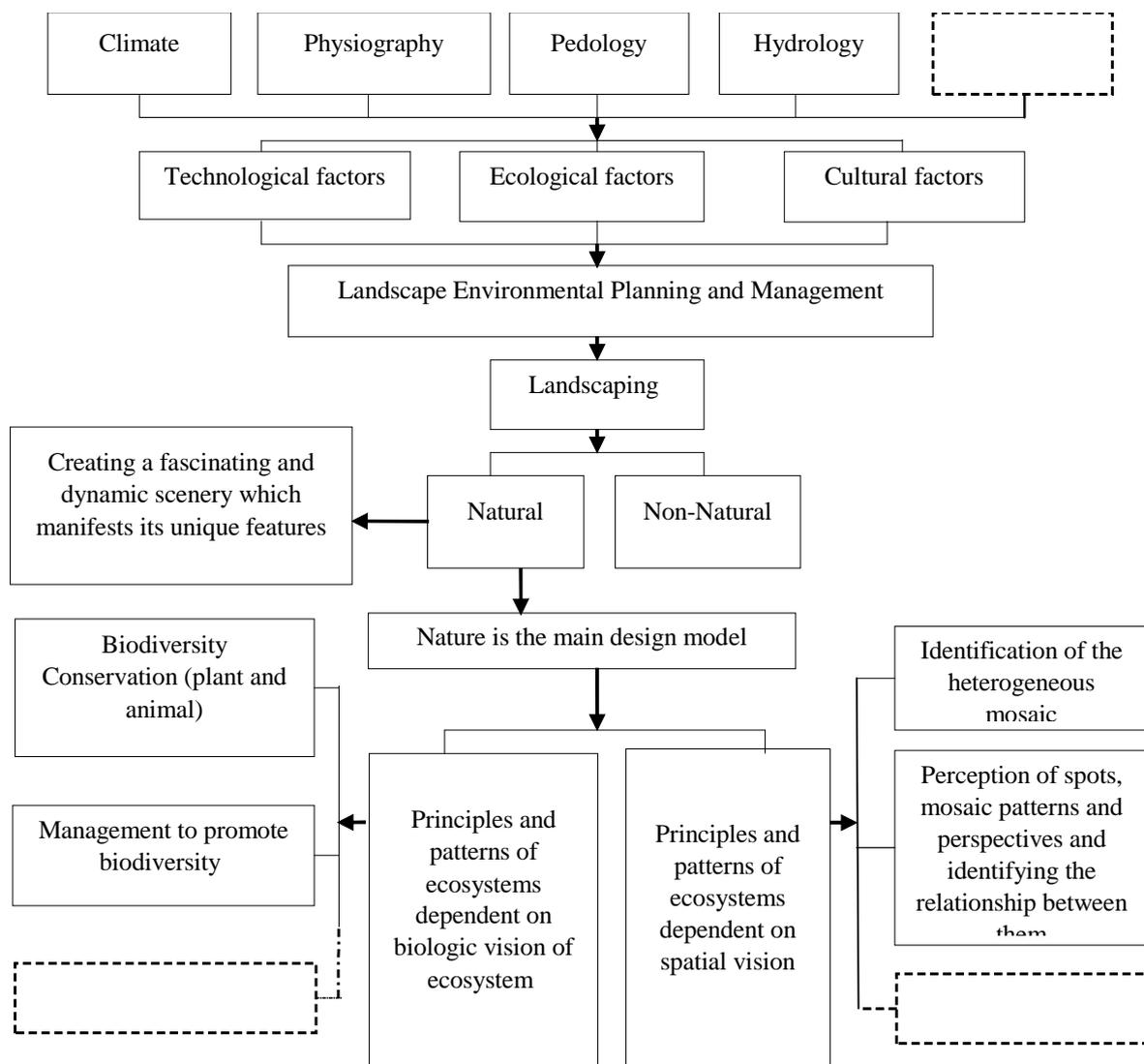


Fig. 4: Environmental Planning and Management Process

continuity of spots, paying attention to heterogeneous mosaic.

2. Principles related to the ecosystem's biologic vision: for instance, regenerating vegetation, increasing the diversity of vegetation structure, maintaining the biodiversity, conserving species, and managing.

In EP of a natural ecosystem, environment language makes it possible to identify the signs and patterns such as waterways, vegetation growth, and the shape of the earth which conveys meaning and makes us informed about the hidden processes and structures.

In this state, land is considered a physical item but a mixture of patterns and processes which explains the nature behavior of in the mentioned context. Therefore, obtaining the nature behavior by evaluating natural processes and patterns can be nature planning solutions. Natural processes evaluation shows that biodiversity plays a key role in biological balance of natural contexts. Therefore, an important factor is the use of native plants in landscape EP and native plant community reduction to animal extinction. Native plants provide a beautiful view, dry-resistance and low maintenance condition. These plants do not need soil enrichment and fertilizer and require less pesticide to eradicate pests. They also require less water, show resistance against local condition, and reduce soil erosion. More importantly, native plants increase diversity and maintain the natural heritage.

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