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## Suggesting a Multi-Purpose Greenway Planning in Persian Coastal Areas Case studies: Anzali in the North Near the Caspian Sea and Bushehr in the South Near the Persian Gulf

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### Abstract

In the present article, the author seeks to define sustainable greenway planning along coastal areas in the North and South of Iran based both on the historical heritages of green routes in the country and international greenway theory that is concerned with American and British definitions. For this reason, in the half first of this paper, the principles and concepts of historical Persian green routes have been scrutinized and identified and then, in the second half of the paper, according to the historical and cultural backgrounds and regional context of these coastal areas, an applied multi-functional greenway plan for settlements in the aforementioned regions has been proposed. Finally, the author concludes that, in the present century, local authorities have to pay attention both to regional conditions and international ideas of the same period to achieve landscape and environmental sustainability. It can be mentioned that in this article, the author used academic resources and applied an analyzing-describing method as a scientific research method. In addition, the two coastal cities of Anzali, on the Caspian Sea, and Bushehr, on the Persian Gulf, have been analyzed.

**Keywords:** green route, greenway, multi-functionality, sustainability, coastal areas, Iran, Anzali, Bushehr.

پیشنهاد برنامه‌ریزی چند منظوره "سبزراه" در مناطق ساحلی ایران  
مطالعه موردی: انزلی - دریای کاسپین، بوشهر - خلیج فارس

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### چکیده

در نوشته حاضر، نگارنده در تلاش است تا برنامه‌ای برای خلق سبزراه پایدار در امتداد خطوط ساحلی شمال و جنوب ایران بر مبنای پیشینه تاریخی مسیرهای سبز در کشور و همچنین تئوری بین‌المللی سبزراه‌ها که ریشه در تعاریف کلی انگلیسی و امریکایی دارد، تعریف نماید. برای نیل به این مقصود، در بخش اول مقاله، اصول تاریخی مسیرهای سبز در ایران بررسی و شناسایی شده و پس از آن، در بخش دوم مقاله بر طبق زمینه‌های تاریخی و فرهنگی منطق ساحلی در شمال و جنوب ایران و همچنین توجه به بستر مناطق یاد شده، برنامه‌ای برای سبزراهی چند عملکردی در سکونت‌گاه‌های مناطق یاد شده پیشنهاد می‌گردد. در پایان، نگارنده نتیجه خواهد گرفت که در قرن حاضر، در هر برنامه برای رسیدن به اهداف پایدار در منظر و محیط، مسئولین و دولت‌ها ناگزیر به توجه هم‌زمان به دو آیتم ملاحظات محلی و اندیشه‌های بین‌المللی هستند. لازم به ذکر است نگارنده در این مقاله از منابع علمی استفاده نموده است و روش تحلیلی - توصیفی را برای دستیابی به اهداف تحقیق برگزیده است. همچنین دو منطقه انزلی و بوشهر در شمال و جنوب ایران به عنوان مطالعه موردی مورد تحلیل قرار گرفته‌اند.

کلیدواژه‌ها: مسیر سبز، سبزراه، چند منظورگی، پایداری، مناطق ساحلی، ایران، انزلی، بوشهر.

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## Introduction

Achieving sustainable development as the most important environmental aim of humans in the current century and requires the use of all available resources while preventing their decrease or destroying them, all over the world. All natural resources, such as coastal districts, need to be paid special attention as a value and common worth on the Earth. Since the 1960s, the economic, social, cultural and recreational values of these regions have been made clear through the efforts of environmental scientists. In recent decades, some experts on landscape, environmental studies and biological sciences have believed that in coastal areas there are several opportunities for the aforementioned aspects which can lead to a significant improvement in the economic conditions of countries. As well, they suggest a sustainable strategy for obtaining relaxation, pleasure and other useful and appropriate uses of these areas. In 1990, this method was named 'greenway' planning. (Little, 1990) Greenways are multi-purpose ideas and can promote microclimatic conditions, cultural and historical landscapes, biological values, social facilities and recreational activities in an integrated zone. This method can be used especially along rivers and seashores as an appropriate system of site and landscape planning. The greenway hypothesis places greater emphasis on sustainability, accessibility, multi-functionality and environmentalism. As a scientific rule in the category of site and landscape planning, it can be used to progress sustainable planning with multi-purpose goals. As a strong rule, the author in this paper claims that it is up to planners and authorities in developing countries to pay attention to international definitions about both greenways and local conditions in their countries, as do the professionals in advanced countries. Through such an approach, developing countries can achieve a breakthrough in the tourism industry in coastal areas. In this article the author first provides two international definitions of greenways and then, in the second stage, shows the main principles underlying Persian green routes as well as the local background in

Iran. At last, in the final stage of this contribution, two case studies have been selected in the South and North of Iran – Bushehr near the Persian Gulf and Anzali near the Caspian Sea.

## International Definitions of Greenways

Fabos posits that there are at least three significant benefits from greenways. First, greenways protect ecologically significant natural systems: mostly along rivers, coastal areas and ridgelines, greenways maintain bio-diversity and provide wildlife migration. Second, greenway networks provide people with extensive recreational opportunities within metropolitan regions and rural areas for walking, hiking, cycling, swimming, sailing among many other outdoor recreational activities. Third, greenway networks provide the population with significant historical heritage and cultural values. (Fabos, 2004) Generally speaking, according to the scientific facts above, there are at least three concepts in the literature on greenways by Fabos which are:

- Natural conservation
- Recreational activities
- Historical and cultural considerations.

In addition, this paper shows a historical process in the definition of greenways by well-known researchers.

## President's Commission on the American Outdoors

The President's Commission on the American outdoors, defined greenways from a functional point of view in 1987. It believed it is up to greenways to provide people with access to open spaces close to where they live and to link together the rural and urban spaces in the American landscape, treading through cities and countryside like a giant circulation system. (PCAO, 1987)

If we accept this as the case, one can mention five points as main concepts for greenways that include:

1. Accessibility

2. Public facility
3. Linkage
4. Hierarchy
5. Non-motorist movement.

Little, an American researcher on the greenway concept formulated four general definitions named as a greenway in 1990. (Little, 1990) These are:

1. A linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or an overland along a railroad right-of-way converted to recreational use, a canal, scenic road, or other route.
2. Any natural or landscaped course for passage of pedestrians or bicycles.
3. An open space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas.
4. Locally, certain strip or linear parks designated as parkway or greenbelt.

This paper traces the roots of these American definitions and enumerates at least five concepts all of which are derived from above factors:

1. Linear configuration
2. Multi-functionality
3. Non-motorist movement
4. Linkage
5. Public facility.

Turner, a celebrated researcher in the UK, describes greenways as linear zones with a spatial focus on environmental objectives that can include biodiversity, habitat protection, historic preservation, erosion control, flood hazard reduction, water quality improvement, air quality improvement, education and interpretation, scenic protection and recreational provision. (Turner, 1998) Turner believes that a greenway is a route which is good from an environmental point of view. (Turner, 1996) This definition uses 'green' as an environmental term and 'way' in a broad sense to include circulation routes for people, animals, air, water and plants. (Turner, 1998) He also supposes that 'redspace' is exciting,

'bluespace' is serene and cool, 'yellowspace' stimulates one's curiosity, 'orangespace' is gay, 'brownspace' is wholesome, 'greyspace' is solemn, whitespace is spiritual, and 'greenspace' is calm and relaxing. The colours symbolize characters. As with paint, the primary colours are red, yellow and blue, but they can be mixed. Many combinations are possible. Greenways, too, can be made in different hues. (Turner, 1998) The most important ideas in this definition have been organized in the table below. The author claims that this definition concentrates more on multi-functionality and mixed land uses. In addition, it is clear that this definition is very comprehensive and emanates from sustainable land use strategies. In 2006, Turner revealed this fact in an article on greenway planning in Britain, his recent work and future plans. In that contribution, he enunciates that greenways can be planned as routes through overlapping zones of environmental quality, including areas of land used for urban agriculture, urban forestry and sustainable urban drainage systems. (Turner, 2006) And ultimately, he made an effort to indicate that greenway concepts have, obviously, ancient roots especially in ancient world. (Turner, 1998)

According to the facts noted above, the author can classify elements of this definition in three categories:

1. Environmentalism
2. Multi-functionality
3. Non-motorist movement.

Finally, Ahern defined greenways as a special kind of network. He supposed that greenways are networks of land containing linear elements that are planned, designed and managed for multiple purposes including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use. (Fabos and Ahern, 1996) Four important concepts in this definition are:

1. Linear configuration
2. Multi-functionality
3. Integration
4. Sustainability.

In addition, these international definitions show that greenway planning is a useful and functional tool to achieve sustainability so that related authorities can

use it in developed countries to improve the tourism industry in their countries. The table below summarizes and sorts these facts by date.

**Table 1- International definitions of greenway.**

Year	Researcher	Definition	Nationality	Main concepts
1987	President's Commission on American outdoors	To provide people with access to open spaces close to where they live and to link together the rural and urban spaces in the American landscape. Treading through cities and countrysides like a giant circulation system.	USA	Accessibility Public facility Linkage Hierarchy Non-motorist movement
1990	C. Little	1. A linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or overland along a railroad right-of-way converted to recreational use, a canal, scenic road, or other route. 2. Any natural or landscaped course for pedestrian or bicycle passage. 3. An open space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas. 4. Locally, certain strip or linear parks designated as parkway or greenbelt.	USA	Linear configuration Multi-functionality Non-motorist movement Linkage Public facility
1995	T. Turner	A route which is good from an environmental point of view	UK	Environmentalism Multi-functionality Non-motorist movement
1996	J. Ahern	Greenways are networks of land containing linear elements that are planned, designed and managed for multiple purposes including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use.	USA	Linear configuration Multi-functionality Integration Sustainability

### Principles of Persian Green Routes

From historical sources, one can derive several principles concerning Persian green routes that there were. The author makes an effort to cite the most important of these in the present article.

First of all, it can be mentioned that, in Persian urbanism, it was up to planners to select secured places for recreational areas; in addition, it was extremely necessary to find sustainable water resources for planning and designation. These are two most important strategies in process of landscape design in history of Persian gardens and royal recreational areas, especially before Islam. (Rastandeh, 2007) As a matter of fact, in historical architecture and urban design in Iran, as an archetype designers have used vernacular materials and vegetation to design buildings and sites. (Pirnia, 2004) Also, Persian gardens and green routes in urban spaces have been configured in a formal method. (Pirnia, 1999, Rastandeh, 2007, Naima, 2006, Daneshdoust, 1990) As a traditional rule, water has also been the most important element in site design. (Arianpour, 1986)

According to the facts mentioned above, seven principles have been identified in Persian green routes:

- Finding sustainable water resources
- Selecting secure places
- Designing the *charbagh* plan
- Planting vernacular vegetations
- Planning linear configuration
- Using formal streets
- Using water as an integrating element along green routes.

It is very important to mention that the two first principles above are key principles in the history of Persian site selection. In the following statements, the author mixes historical principles of Persian green routes with international definitions about greenway planning to obtain local answers to local problems in the age of globalization. For this reason, the manuscript identifies two general local plans for

coastal areas in the South and North of Iran in Bushehr and Anzali near the Persian Gulf and Caspian Sea, in that order. In the first case study, according to local difficulties, Persian green route planning places more emphasis on flood control and conservation by means of greenery and vernacular plants. Therefore, it can be supposed that in this district of the country, natural areas and settlements near the Persian Gulf are protected via sustainable methods based on greenway planning in categories of natural conservation, environmentalism and multi-functionality. In addition, in the North, in Anzali, Persian green route planning concentrates more on recreational activities in Anzali Wetland based on recreation activities, non-motorist movement and, finally, multi-functionality as three concepts of greenway planning. Ultimately, from a historical and cultural point of view, it is necessary that Persian principles of green routes should be used in coastal areas in the North and South of Iran given its great historical and cultural background. This fact has been mentioned in greenway definitions as Historical and cultural considerations.

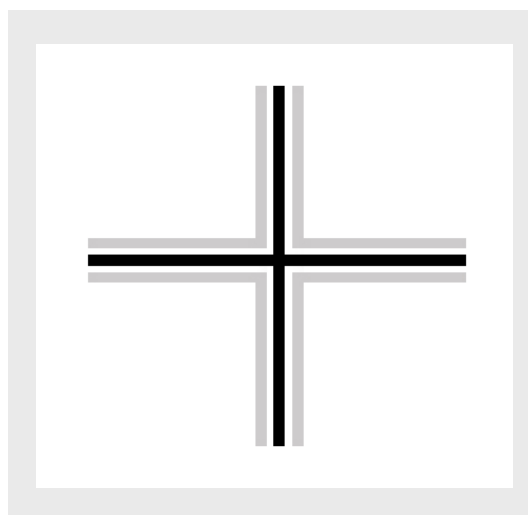


Figure 1- The *Charbagh* plan with its linear configuration and formal streets.

### Case studies

Bushehr is located in the Southwest of Iran, near the Persian Gulf, and has a very hot and humid climate.

In this region, annual stormwater and floods occur and the local people have suffered these natural hazards for many centuries. Anzali is located in the Northwest of Iran, near the Caspian Sea in a very beautiful landscape with many recreational opportunities. From a climatic point of view, it should be mentioned that weather in this area is cool and very nice. (Ghobadian, 2005)

There were several reasons that led us to select Anzali and Bushehr for this investigation in the present paper. We can trace, obviously, a close relationship between two initial principles of Persian green routes and local conditions in these coastal areas. These initial adaptations are cited in the table below.



Figure 2- Locations of the two case studies in the north and south of Iran

Table 2- Initial principles of site selection based on historical principles of Persian green routes

Principles	Anzali	Bushehr
Finding sustainable water resources	Wetland, rivers, rainy climate	Gulf, rivers, floodways
Selecting secure places	Secure place, from the earthquake point of view, it is located in a safe place between sea and mountains, with fertile lands with wonderful landscapes for tourists	Secure place from earthquake point of view, with normal varieties of plants, a safe place for trade and navigation for tourists

Furthermore, there are many opportunities in these cities that can cause to manifestation in tourism industry. In the following, two different plans for Bushehr and Anzali have been suggested based on both international greenway definitions and the principles of Persian green routes.

3. Reduce on-site flooding
4. Reduce soil erosion
5. Capture silt
6. Improve on-site drainage
7. Reduce pollution
8. Improve aesthetic quality

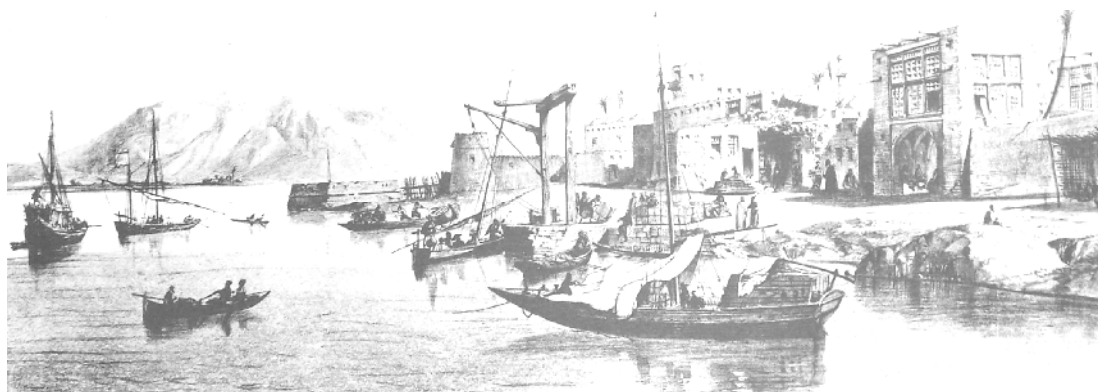


Figure 3- Historical landscape from waterfronts in Bushehr about 150 years

### Flood Control in Bushehr

In order to control floods in Bushehr, this paper anticipates greenway planning by means of BMP methods to achieve sustainability. To achieve this goal, the aforementioned plan attempts to promote the environmental context in riparian zones and create a sustainable drainage system along rivers and floodways in this area as a greenway, based on principles of Persian green routes. This aims to achieve multi-functional purposes such as protected locations, ecological areas along waterways to provide facilities for wildlife migration, recreational areas in safe places along rivers and floodways near the Persian Gulf and, ultimately, promoting waterscape and urban landscapes in these areas.

As a matter of fact, to achieve these overarching aims, the author proposes to the local authorities to use the source control method as a suitable methodology for this region. By means of this method, they can promote environmental conditions in the following categories:

1. Reduce downstream flooding
2. Reduce the cost of the drainage

9. Enhance recreational opportunities
10. Replenish ground water
11. Supplement domestic water supplies
12. Catch water for irrigation (Turner, 1998).

To reach these worthwhile goals, detention facilities, infiltration facilities, vegetated roofs, and porous pavements have been suggested. What is extremely important is that increasingly they should pay attention to local opportunities and not forget the principles of Persian green routes as a reputable background to the process of planning, design, implementation and, finally, management.

According to one of the most important principles of Persian green routes, planners should regenerate the area on the basis of archetypes and multi-purpose greenway planning in Bushehr. By this strategy, the prices of plant irrigation and costs of maintenance are also sharply decreased. The historical and cultural background is also very important and can play a remarkable role in the process of planning and influence the plan overall. Figure 4 illustrates a schematic multi-purpose greenway plan with a greater

emphasis on flood control. In this figure, settlements, *Charbagh* plans, sustainable drainage systems and greenways are indicated by A, B, green points and red lines, respectively. Multi-functional areas have also been planned as buffer zones to promote site security. Walking, cycling and other activities along the river, on greenways and within *Charbagh* plans create ample opportunity for the people to gain pleasure and enjoy relaxation.

### Recreational and Visual Areas in Anzali

In Anzali, multi-purpose greenway planning places

more emphasis on recreational and extracurricular activities in the wetland and its surrounding area. To achieve this goal, environmental education is planned and managed as the most important stage in the planning process. Chart 1 illustrates the environmental education process from the first to the final stage and their results. According to this method, it is anticipated that this process can lead to promoting environmental awareness, rehabilitation and conservation of nature and environment, creating recreational resources, creating ecological opportunities and, finally, increasing economic prosperity.

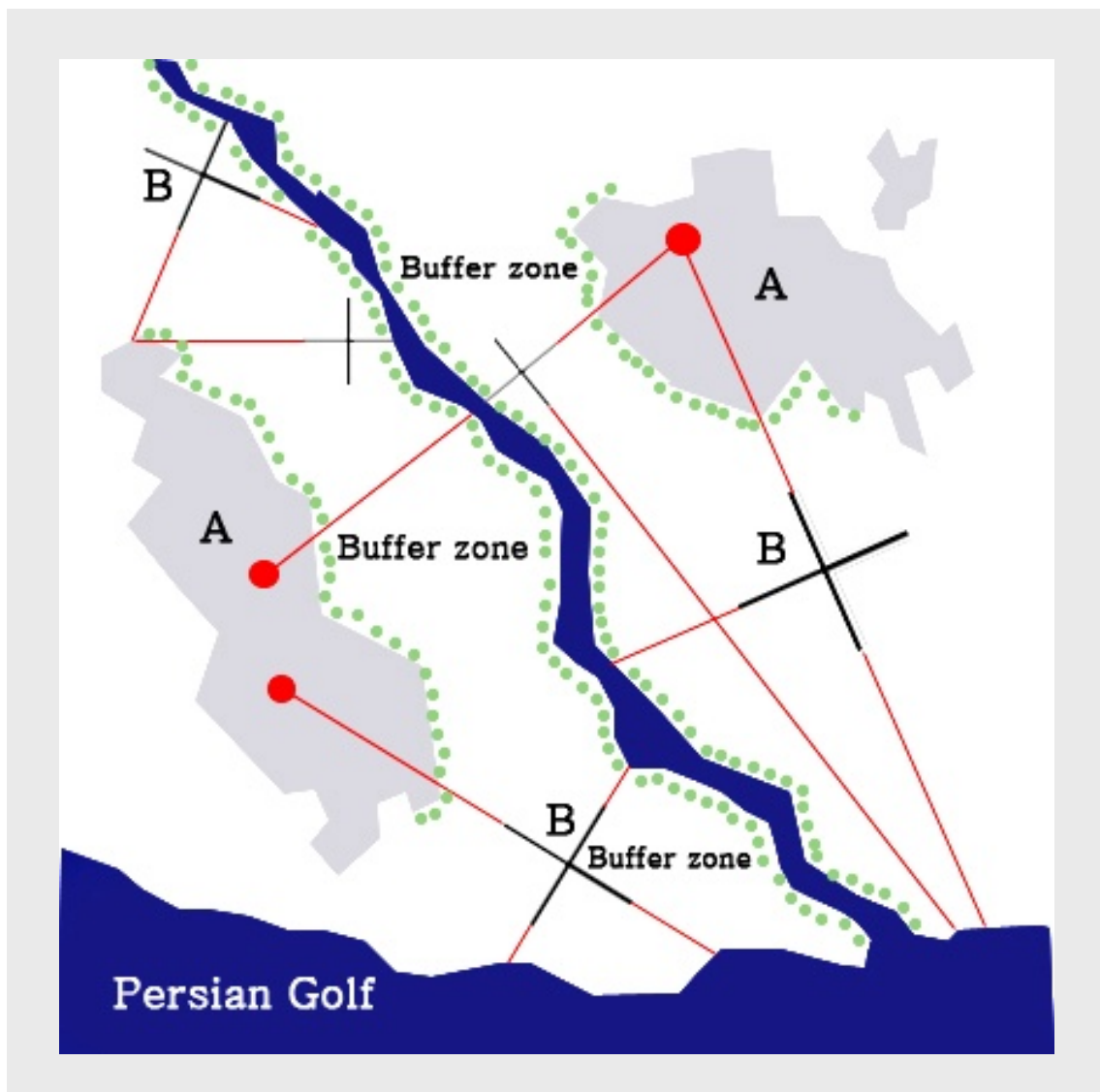
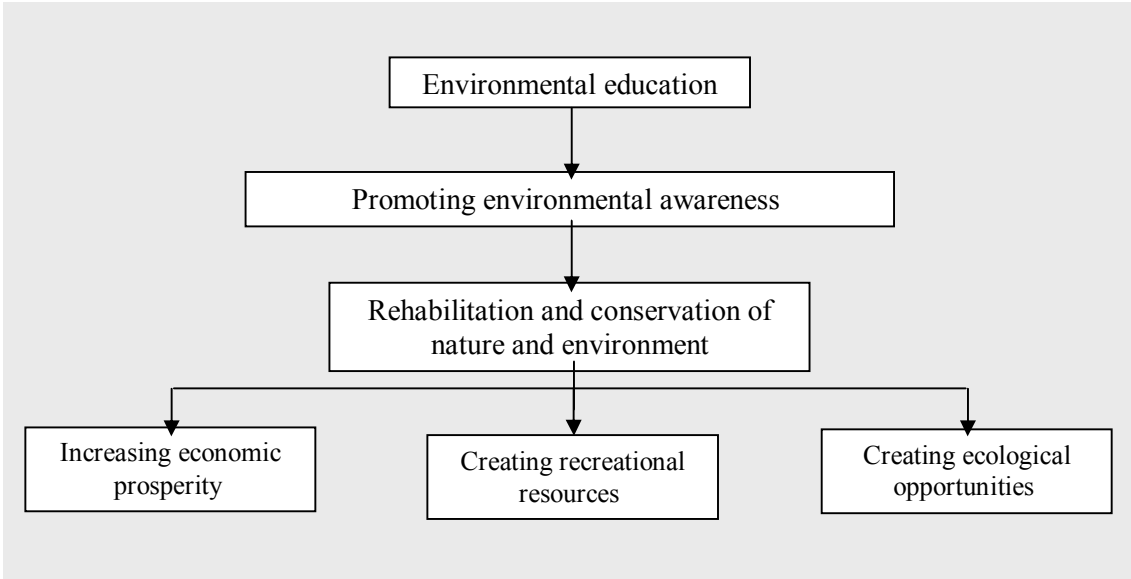


Figure 4- Schematic multi-purpose greenway plan with greater emphasis on flood control





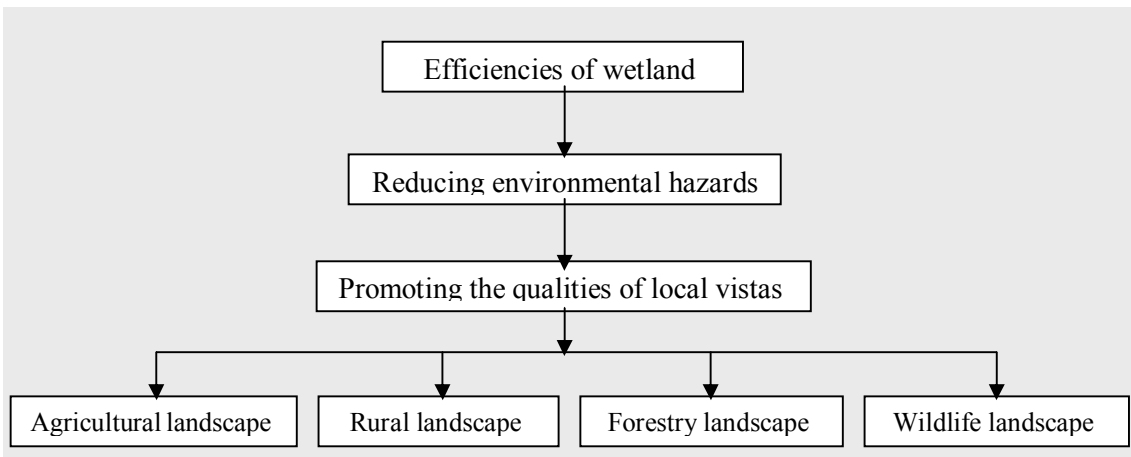
**Chart 1- Process of environmental education and its results**

In the second chart, the author sets out the functions of the wetland as a natural water element near the coast. Chart 2 emphasizes agricultural, rural, forestry and wildlife landscapes within the wetland and its surrounds.

In multi-functional greenway planning for Anzali Wetland, five general plans have been suggested, all of which have a strong relationship with Anzali Wetland. They are the following:

1. Educational plan
2. Visual plan
3. Recreational plan
4. Exhibition plan
5. Mixed plan

In this planning process, planners should pay attention to principles of Persian green routes in the process of design and organization of the wetland and, at the same time, pay attention to international greenway definitions. For this reason, local authorities in Anzali should plan walking routes, cycle routes, footpaths and visual facilities to fulfill successfully the requirements for the organization of this site. In Figure 5, rural landscapes, ecological opportunities, Charbagh plans and greenways (including walkways and waterways) are identified by A, green color, B and red lines.



**Chart 2- Rehabilitated landscapes based on suitable functions of the wetland at Anzali near the Caspian Sea**

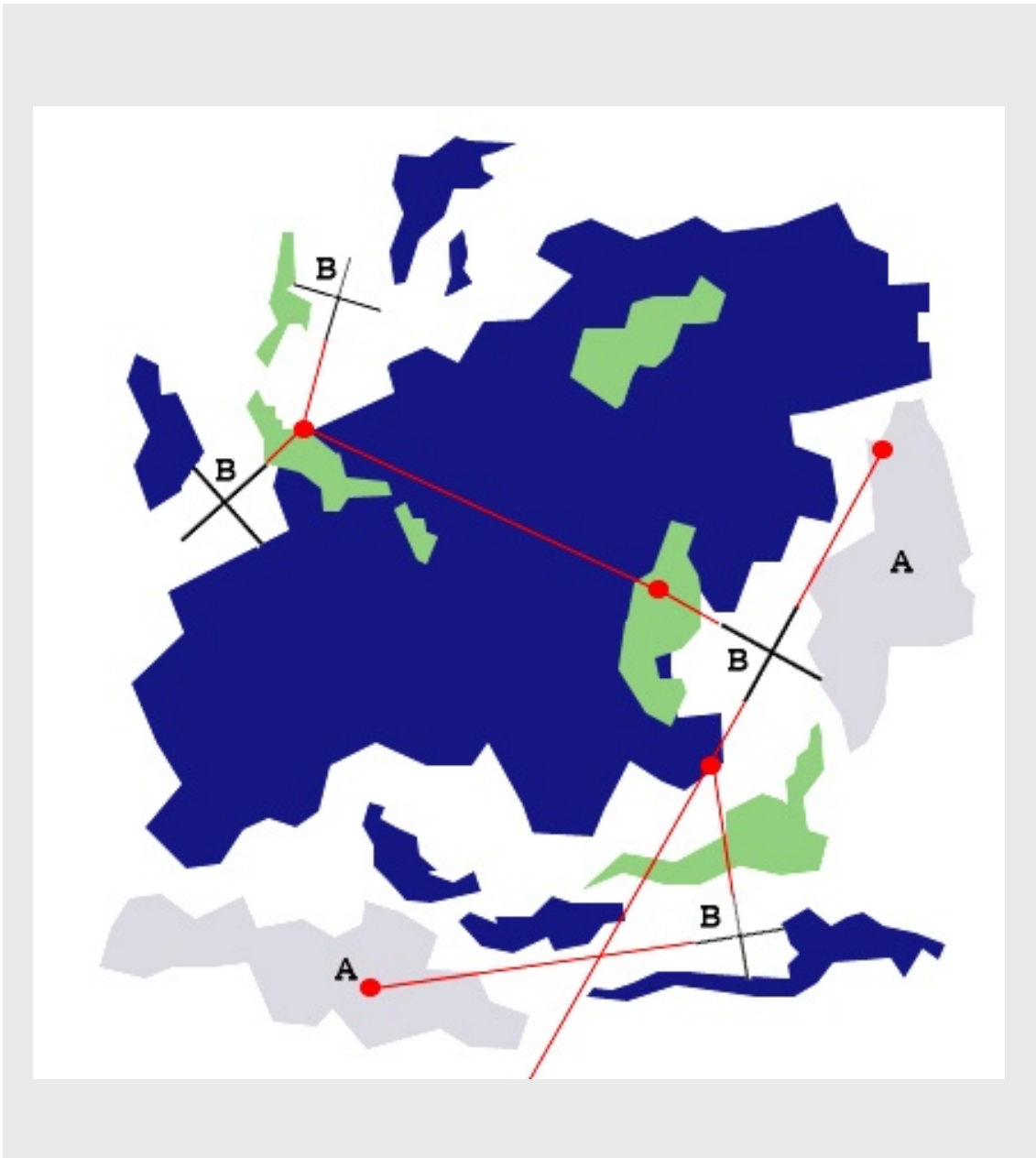


Figure 5- Schematic multi-purpose greenway plan with more emphasis on landscapes and conservation

### Discussion

According to the facts set out above, multi-purpose greenway planning in Bushehr and Anzali relies on local contexts and backgrounds. This, in itself, can lead to two different proposals on the basis of the unique greenway concept. Moreover, these suggestions are based on considering the principles of

Persian green routes on a conceptual level. In the schematic diagrams above, conceptual strategies to obtain the aforementioned goals have been illustrated. In addition, Table 3 shows the most important strategies in Bushehr and Anzali separately, based on basic greenway concepts.

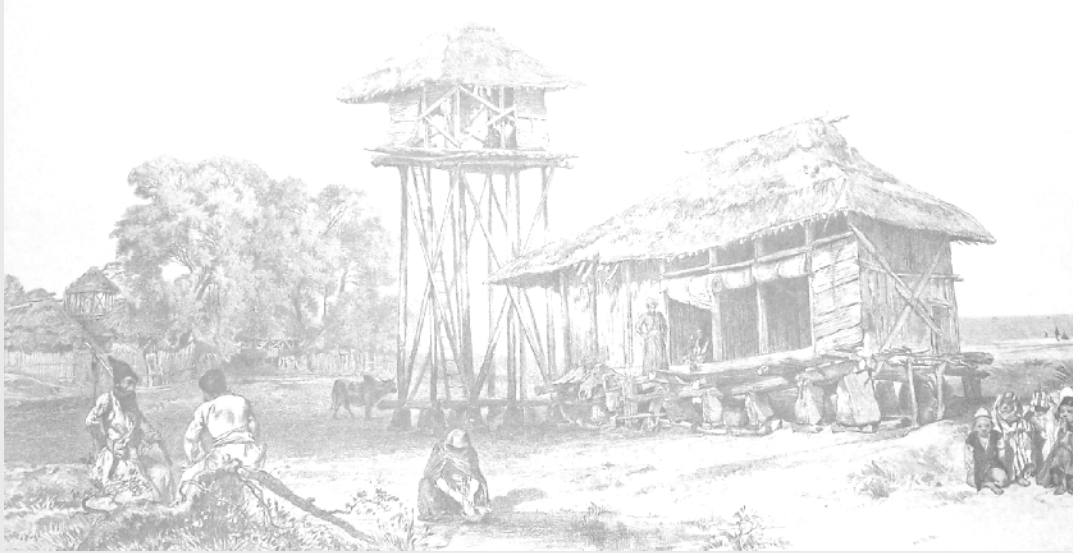


Figure 6- Rural landscape in the north of Iran illustrated by French painter about 150 years ago



Figure 7- Persian palace on the *Charbagh* plan along Caspian Sea as illustrated by French painter ca. 150 years ago

Table 3-Most important strategies in Bushehr and Anzali based on basic greenway concepts

Basic greenway concepts	Strategies for Bushehr	Strategies for Anzali
Sustainability	Using vernacular vegetation for flood control and management Regenerating traditional settlements along rivers and floodways	Rehabilitating wetland region Rehabilitating agricultural, rural, forest and other significant landscapes
Accessibility	Creating appropriate roads, walkways, pathways, footpaths and cycle ways along rivers, floodways and near the Persian Gulf	Regenerating historical green routes across agricultural lands
Environmentalism	Reducing natural hazards and exploiting their opportunities for recreational activities	Conserving the wetland and other water bodies with all of their components, correctly.
Multi-functionality	Planning multi-purpose land uses for the public and tourists, based on sporting and recreational activities	Planning multi-purpose land uses for the public and tourists based on wonderful landscapes and historical aspects
Non-motorist movement	Encouraging walking with suitable facilities along waterways and providing special facilities for sporting activities such as cycling, hiking and walking	Encouraging walking with suitable facilities across the wetland and its surrounds and providing special facilities for sporting activities such as fishing, walking and other safe activities
Integration	Recognizing boundaries and limitations of rivers, floodways and seashore with a powerful planning and a compatible design	Recognizing boundaries and limitations of the wetland with a powerful planning and a compatible design
Linear configuration	Organizing linear ways along water bodies	Designing linear ways, including waterways, dry ways and mixed ways across the wetland
Public facility	Providing infrastructures and suitable facilities and other emergency services to create a safe and peaceful place for recreational activities	Providing infrastructures and suitable facilities and other emergency services to create a safe and peaceful place for recreational activities
Linkage	Linking places and land uses together in a clear plan	Linking places and land uses together in a clear plan
Hierarchy	Predicting fragmented zones to provide secure places Locating flood control services as a beautiful and useful buffer between recreational areas and dangerous zones	Predicting fragmented zones to provide secure places Zoning land is used to create and organize conserved areas within the wetland

## Conclusion

From the above facts, it can be noted that greenway planning is an appropriate tool in the planning process in coastal areas because it is very flexible and can be adapted to different times and places. Generally speaking, however, it contains several basic and fundamental principles all of which can be mixed with local backgrounds and site opportunities. As a recognized method, it can be used in developing countries like Iran to make a giant leap forward in relation to the economic, social, cultural and other aspects of the tourism industry. In essence, in Iran, it can be implemented in parallel with the principles of historical green routes. In this category, it is up to the government to provide attractive conditions for investors by means of incentives. In addition, planners should take account of the multi-purpose greenway concept on the basis of the particular historical, cultural and social background of each area. By this strategy, all our coastal areas will be committed to progress, sustainability, multi-functionality, environmental protection and, finally, economic prosperity in the long-term.

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