

Original Article: Necessities of Sustainable Development in the Coastal Areas of Iran

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ABSTRACT

Coastal areas of Iran with a length of about 700 km in the north and more than 2000 km in the south with about 20% of the country's population include a major part of social, economic, and industrial activities such as agriculture, fishing, tourism, and especially industry. Oil, gas, and petrochemicals are of great importance in various ways and have always played an important role in the development plans of the country. Given the diversity and multiplicity of natural resources and the desire and need of a large number of industries related to the use of land or coastal resources, management practices in this area can be proposed in three levels of management, which include participation in planning (influencing regional programs), monitoring and monitoring, and direct management practices. Accordingly, we addressed the need for sustainable development in the coastal areas of Iran.

Introduction

Coastal area management and environmental assessment

So far, no comprehensive definition of the coastal area has been provided. The natural forms of the coastal area

include coasts, lagoons, estuaries, cobblestones, coral reefs, rocky shores, sand dunes [1-5]. For all aquatic invertebrates and fish, it is used by humans and commercial fishermen. Important functions of the coastal area for which economic value can be easily determined include stabilization of the shoreline, aquaculture, recreation, and flood

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control [6-9]. Also, coastlines in many countries are a good place for industrial and commercial offices and attractive for tourism. Coastal areas in developing countries are increasingly exposed to high population pressure and multiple economic activities in several areas [10-15].

Such a situation often leads to complex and increasing biological, resource-depleting consequences, as well as sharp contrasts between competing working groups such as those that rely on coastal resources for livelihoods and those interested in recreational uses of coastal areas. The exploitation of coastal fish and plants in large parts of the world has already reached stable levels. In many areas, ecological systems have changed irreversibly [16-19]. Continuous degradation and deterioration of marine biodiversity are significant and lead to a decrease in the potential for sustainable development in the long run. Sustainable environmental assessment can be one of the planning tools to achieve these goals [20-23].

Coastal areas and the need to pay more attention to them

Coastal areas are one of the most productive and dynamic ecological resources and the bedrock of great economic and social activities in the world [24-27]. Valuable ecological resources, biodiversity, and abundant oil and gas reserves, and huge economic activities have made these areas one of the most sensitive and valuable areas in the world. In recent decades, the misuse of these valuable resources has put most of the world's coastal areas in a critical and dangerous situation, as the pressures on them far outweigh their environmental tolerance capacity [28-30]. Population growth, improper use of resources, pollution of coastal areas, development of activities that are not compatible with the environment, and lack of coordination between activities in the coastal strip are the most important reasons for putting pressure on these areas [31-35]. According to past studies, more than 39% of the world's population lives 100 km from the coast. Of

course, the population whose activities affect the coastal ecosystem and, on the other hand, their survival depends on the coasts and oceans, is much higher than these figures and certainly covers the majority of the planet's population [36-39]. In summary, the most important problems of coastal areas that threaten sustainable local, national and global development can be categorized as follows:

- a) The concentration of population in the coastal strip and threat to the valuable natural resources of this area;
- b) private exploitation of development rights and their benefits;
- c) reduction of biodiversity and loss of vulnerable marine and terrestrial species;
- d) spread of all kinds of environmental pollution in all coastal areas (land and sea);
- e) destruction of historical and ancient monuments;
- f) creating conflict and coordination and conflict between the benefits of various economic activities through segregation in development plans; and
- g) restricting public access to beaches and their benefits [40].

Iran, with about 3,000 kilometers of coastline with rich resources, valuable natural resources, and productive and sensitive ecosystems in the Caspian Sea, the Persian Gulf, and Oman Sea, is facing the mentioned problems. In the northern coasts of Iran, improper and over-exploitation of natural resources, destruction and change of natural ecosystems and land-use change of the most fertile plain and forest lands, improper exploitation of groundwater resources, the advancement of saline water into freshwater aquifers, and increasing pollution of surface water pollution are among the challenges this country is grappling with [41-44]. Inadequate wastewater disposal and agricultural drainage, oil exploration and extraction exploration activities, lack of proper interaction between different sub-sectors of transportation, high population density and

limited job opportunities, inadequate location of towns and industrial areas, low level of services Superiority in middle and middle cities and severe spatial inequality in the service system and the like are among the major challenges despite the excellent geographical, natural and ecological capabilities throughout the region [45-49].

In the southern coasts of Iran, the challenges include improper use of natural resources, lack of adequate facilities to control surface water and groundwater depletion, lack of port facilities following the development capabilities of the region, inadequacy of infrastructure networks, and especially transport network capacity following development requirements, lack of observance of environmental standards in the establishment of activities, lack of spatial balance between the concentration of modern activities of oil and gas industry with other activities, change of land use potential for agriculture, the gap between infrastructure and physical characteristics, lack of tourism facilities and equipment, and increasing pollution of the sea and coastal areas [50-54]. One of the main challenges is that despite the sensitive and strategic location near the international open waters, being in the path of international corridors north and south and access to potential markets in the region, having huge oil and gas resources and related industries and rich marine resources in those areas can be seen [55-58].

To exploit the above resources and facilities, revive public rights, and reduce harmful environmental effects, inter-sectoral coordination, and use of beaches as gates of the country within the framework of the country's long-term vision document and the law of the fourth economic, social and cultural development plan can be effective [59-62]. The national coastal management document recommends a three-tier approach, including strategic, structural, and executive management levels [63-66]. At the first level, long-term strategies for the development of the country's coastal areas are presented in the form of landscaping strategies in these

areas. In the second level, the physical bedrock for the realization of these strategies will be done in the form of (physical) development plans, and in the third level, the integrated coastal management plan will be prepared and implemented [67-70]. Also, in terms of geographical scale, this document includes areas beyond the coastal area in the form of areas, including impact area, monitoring area, integrated coastal management area, and special coastal strip area [71-74].

Prospects for the development of the country's coasts

The coastal areas of the country are developed areas that serve as a bridge of communication and interaction with other countries of the world, facilitate the internal and external relations of the country's economy and help to create regional balances. Sustainable resources and capabilities and environmental protection ensure the security of inland areas through water borders and generally act as a symbol of the country's development [75-77].

In this regard, the northern coast of the country is a model for proper use of environmental resources, preservation, and promotion of natural landscapes and valuable ecological resources, tourism capabilities, and leisure for the people of the country and other countries in the region. Sustainable use of other agricultural, industrial, service, and cultural capabilities and benefits are to meet national needs and export development. The southern coast of the country is a symbol of national authority by using open water resources and the country's capacities in the field of energy and mineral resources, industrial, commercial, transportation, and transit capabilities; also scientific capabilities and human resources are considered as the front line of the country's interaction with the world [78-81].

Long-term goals of organizing the country's coasts

a) Using the sea as gateways for communication and interaction with other

countries in the direction of comprehensive development of the country and economic extraversion [82];

b) creating the ground for sustainable socio-economic development of coastal areas

d) guaranteeing the right of public use of beaches and seas as a national treasure; and

e) optimal use of space and coastal resources and reduce competition in the exploitation of these resources among users [83].

General strategies for organizing the country's coasts

a) Development of economic activities compatible with the environmental capacities of coastal areas;

b) prohibiting private uses of coastal space and providing public access to it;

c) creating the ground for public participation in organizing coastal areas;

d) conservation and restoration of coastal and marine ecosystems;

e) prevention and removal of environmental pollution in coastal areas;

f) improving the capacity to deal with environmental hazards and unforeseen events;

g) ensuring the security of communities and activities located in coastal areas;

h) establishing special legal and financial systems in coastal areas to guide development activities; and

i) creating a culture of proper use of beaches and sea [84].

Special strategies for organizing the northern and southern coasts of the country

A. North coastal areas:

a) Creating a balance in population distribution, commensurate with the

through proper utilization of coastal capacities;

c) environmental protection of coastal areas;

resources, environmental capacity, and tolerance capacity of ecosystems in areas prone to the development;

b) adopting the necessary mechanisms to liberate the coastal areas and rivers, prevent pollution and protect the environment, and continuously control and monitor the protection of these areas;

c) equipping and strengthening potential areas and different areas of tourism and improving the level of management in national and transnational dimensions with coordination between the sector and within the sector with the priority of using the facilities of the private and cooperative sectors;

d) preventing the uncontrolled expansion of coastal cities and organizing a new population settlement center due to the limitations of the coastal strip;

e) development of coastal ecotourism protection, controlling and protection of water and soil resources, protection and restoration of marine living resources, controlling marine environmental pollution, and deforestation, along with strengthening environmental management;

f) equipping fishing docks and ports, organizing and improving the quality of the fishing fleet, aquaculture development, increasing the fisheries industry, and developing exports by improving management, to ensure the country's food security;

g) development and equipping of sea entry and exit points and increasing the utilization coefficient of ports and creating suitable facilities for the optimal use of

existing capacities and responding to the growing demand for transit of goods;

h) land-use allocation commensurate with the capabilities and capabilities of the coastal environment;

i) using the natural capabilities of water and soil resources to develop and modernize agricultural activities; and

j) strengthening and developing agriculture-related industries and electronics industries with an emphasis on establishing clean industries due to the environmentally sensitive coastal areas and protecting them from the development of industries that are not compatible with the environment [84].

B. South coastal areas:

a) Development and establishment of industrial activities based on existing oil and gas reserves and mines with emphasis on chemical, petrochemical, mining, and marine industries in accordance with the environmental capacity and with regard to the establishment of activities related to the South Pars gas field on the coast Persian Gulf;

b) creating a balance in the distribution and composition of the population and strengthening the existing population centers, especially small and medium-sized cities, according to the development perspective of activities located on the shores of the Persian Gulf and the need to locate some of them on the shores of the Oman Sea;

c) providing infrastructure and the ground for the development and construction of tourism facilities and utilization of historical and natural capacities with the participation of the private sector and cooperatives, especially on the shores of the Persian Gulf;

d) defining a principled approach to climate and environmental issues such as soil erosion, marine environmental pollution, and wastewater disposal and protection of coastal strip ecosystem with emphasis on sensitive habitats and vulnerable plant species and animals, especially on the shores of the Persian Gulf;

e) strengthening and equipping fishing docks and ports, protection and reconstruction of reserves, development of fishing and aquaculture, to promote the share of the fishing industry in the region and the expansion of industrial fishing in waters commensurate with their environmental potential;

f) improvement and development of infrastructure networks, provision of water resources, and strengthening of communication routes in accordance with the establishment of activity and population, through fast communication networks and urban equipment;

g) practicing Coastal Strategies Approved in the Fourth Development Plan;

h) organizing and preventing pollution and destruction of coasts, with priority on the Caspian Sea, through the development of a comprehensive plan to organize the coast, which includes necessary measures such as demarcation, the establishment of integrated coastal management, environmental and maritime rules and standards, fishing, and aquaculture, amending and supplementing laws and regulations accompanied by determining the responsibility of the relevant bodies in the field of policy-making, implementation, and supervision;

i) as a responsibility of the government, facilitating trade and transportation, establishing maritime industries, expanding tourism, facilitating the sustainable exploitation of fishing resources and the optimal use of these areas, to develop production activities and maritime services, while maintaining policy-making, planning, and oversight. Hence about it, can write:

j) establishing security and order, and determining legal regulations and judicial procedures;

k) environmental protection and demarcation and zoning of coastal areas and inland and international waters;

l) sustainable exploitation of coastal and maritime areas, supporting the fleets of the

Islamic Republic of Iran in accordance with international rules, and supporting

investments in economic activities, such as: maritime transport, non-renewable marine resources (oil and gas, mines, etc.), marine renewable resources (Aquatic and...), maritime tourism, support services, and maritime industry;

m) scientific, engineering, management, legal and specialized marine, and naval skills training;

n) marine research, recording of oceanographic information monitoring, and marine information and communication technology;

o) supporting the national fleet in accordance with international rules;

p) providing facilities and infrastructure necessary for the development of fishing activities, including: Development, equipment, maintenance, and improvement of fishing ports; and renovation of the maritime transport fleet using managed funds.

q) renovation of the maritime transport fleet using managed funds.

Accordingly, organizing and regulating the establishment of activities in these areas, especially the northern coasts of the country for which tourism functions are provided, should be a priority in the country's development programs and specific policies and programs for optimal use of these areas to be implemented. Any procrastination and loss of opportunities in this field can impose harmful effects and consequences on the country and make the existence of these areas and achieving sustainable development very costly and sometimes impossible.

The need for optimal organization and management of beaches

Coastal areas include fertile and diverse habitats that are very important in terms of human settlement and local livelihood and development. Part of the world's population lives along the coastline, 60 km from the sea, and this figure has increased by 25% in 2020.

Many of the world's poorest people live in coastal areas. Coastal resources play a vital role for many poor people, especially in developing countries. Despite national, regional, and international efforts, current methods for controlling and managing marine and coastal resources have not been effective or consolidated to the extent that sustainable development can be achieved. As a result, many of these coastal areas, especially in developing countries, have been exposed to all kinds of pressures from human activities and have suffered irreparable damage.

Following these degrading processes in marine and coastal environments, Chapter 17 of Agenda 21 (International Community Charter on Environmental Issues and Problems), held in Rio de Janeiro, Brazil, in 1992, on the protection of oceans, Seas, including closed and relatively closed seas, coastal areas, emphasizes the protection and proper exploitation and development of their living resources.

Thus, the importance of preserving and protecting the coasts and careful monitoring of how to exploit and use these areas optimally and the establishment and loading of various human activities in these areas becomes clear, given the specific geographical location, including security, military, tourism, environmental components. It is economically and socially very important and for this reason, the necessary compatibility between uses should be established and activities should be licensed in accordance with the potential of coastal areas. Failure to pay attention to this issue can impose adverse effects and consequences on these areas and overshadow many of the capabilities and capabilities of these areas. Unfortunately, the lack of attention to this issue has caused many environmental and social problems on the coasts of the country, especially the northern coasts, which in recent years has been raised as one of the main issues.

Problems facing the organization of beaches in the north of the country

the high seas. Its length is between 1030 to 1200 km and its width is between 208 to 480 km (average 344 km), its area varies due to changes in water level and is currently estimated at 378 thousand square kilometers. The average depth of this sea is about 180 meters, which in the southern parts reaches about 1000 meters and in the northern parts it is only a few meters. The length of the coastline of this sea is about 6440 km, of which more than 5300 km is in the northern neighboring countries and about 1000 km is the coastline of Iran. This length, including the shoreline inside the water bodies connected to the sea, is like Gorgan Bay. If these lines are removed, the exact direct coastline of the Caspian Sea off the coast of Iran will be about 740 km.

The Caspian Sea is connected to the three northern green provinces from the south: Gilan province in the west, Golestan in the east, and Mazandaran in the middle, which have a total area of 61.465 km and cover 2.83% of the country's area. It seems that one of the main reasons for the current problem of the Caspian coast in recent years is the lack of attention to the natural conditions of the lake, or in other words, periodic fluctuations in the water level of the sea, which has led to many private sector planning and investment. For this reason, brief references to the reasons for the rising Caspian Sea water level can draw the attention of coastal authorities and planners to the importance of this factor in future planning and policy-making and it can be considered as an important aspect.

Conclusion

Coastal areas around the world are historically among the areas that are always the most exploited due to the rich resources. In recent decades, the misuse of these valuable resources has left most of the world's coastal areas in a critical and dangerous situation, as the pressures on them have exceeded their environmental tolerance capacity. Population

The Caspian Sea is the largest body of inland water in the world, which currently has an area about 27 meters lower than the level of

growth, improper use of resources, pollution of coastal areas, development of activities incompatible with the environment, and lack of coordination between activities in the coastal strip are the most important reasons for putting pressure on these areas.

This set of issues and problems has led many countries, especially developed countries, to formulate and implement various rules and regulations for the optimal use of these areas, so that the establishment of different uses by the private and public sectors is possible only through obeying these rules and regulations. The Islamic Republic of Iran is no exception to this rule and in recent years it has begun efforts to regulate and make optimal use of these areas, but for various reasons, these measures have not led to the desired results. The issues and problems of the coastal areas of the country in general and the northern coasts of the country, in particular, are still showing themselves.

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