

# Integrated Coastal Area Management

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**Abstract:** An ICAM is regarded as a way to improve the quality of life of communities dependent on coastal area resource and maintain the ecosystem. The considerable efforts undertaken on all continents to carry out refine the concept of ICAM have resulted in its adoption as the key paradigm for the sustainable development of coastal areas. In this paper highlights the implementation of ICAM to develop the coastal areas both economical and environments. Here we discussed many problems, the coastal manager myth, and the positivist illusion. The results show the development of coastal area with the help of ICAM programs.

**Keywords:** Quality in both economical and environmental aspects

## I. INTRODUCTION

A coast is more than just a beach! The coastal area is the transitional area between land and sea. It is defined as a strip of land and sea of varying width depending on the nature of the Environment and management needs. It seldom corresponds to existing administrative or planning units. The natural coastal systems and the areas in which human activities involve the use of coastal resources may therefore extend well beyond the limit of territorial waters and many km inland. The worldwide average width of the coastal area on the terrestrial side is said to be 60 km. The area occupies less than 15% of the Earth's land surface, yet it accommodates more than 60% of the world's population. Furthermore, only 40% of the one million-km of coastline is accessible and temperate enough to be habitable. As a result, coastal areas are marked by above-average concentrations of people and economic activity. Ocean provides many varieties of resources for the civilized life of human being. Some of the important activities in the coast/ocean are listed below:-

- Oil & Gas exploration & exploitation
- Aquaculture
- Desalination for potable water
- Port & Harbor
- Shipping & Navigation
- Dredging / Reclamation
- Shore Protection against erosion
- Sea water intake Structures

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- Disposal of wastes in the marine environment
- Renewable energy from the Ocean (Offshore Wind Energy / Wave Energy / Tidal Energy / Ocean thermal Energy / Ocean Currents)
- Island Development
- Mangrove development
- Sea Survey
- Global warming and Sea level rise
- Prediction of design conditions
- Environment impact of new & existing projects
- **Integrated coastal area management**
- Marine pollution
- Innovative new structures for Economy & Improved life
- Remote Sensing Applications
- Field data collection
- Overexploitation of Living & Non-Living resources
- Tourism & development, Sea sports
- Development of New Township along the Coastline
- Coastguard Establishments
- Human Resource Development

## II. INTEGRATION

"Implementing and monitoring policies, investment strategies, administrative arrangements, and harmonized standards as part of a unified program, and making adjustments, if necessary, to ensure stated objectives are being met." Several dimensions of integration need to be addressed as a part of an ICAM process:

1. **Intersect oral integration:** Integration among different sectors involves both "horizontal" integration among different coastal and marine sectors (e.g., oil and gas development, fisheries, coastal tourism, marine mammal protection, port development) and integration between coastal and marine sectors and land-based sectors that affect the coastal and ocean environment, such as agriculture, forestry, and mining. Intersect oral. Integration also addresses conflicts among government agencies in different sectors.

2. **Intergovernmental integration:** integration among different levels of government (national, provincial, local). National, provincial, and local governments tend to play different roles, address different public needs, and have different perspectives. These differences often pose problems in achieving harmonized policy development and implementation between national and sub-national levels.

3. **Spatial integration:** integration between the land and ocean sides of the coastal area. There is a strong connection between land-based activities and what happens in the ocean involving water quality, fish productivity, and the like; similarly, all ocean activities are based or dependent on coastal land.



different systems of ownership and government administration predominate on the land and ocean sides of the coastal zone, often complicating the pursuit of consistent goals and policies.

4. **Science-management integration:** integration among the different disciplines important in coastal and ocean management and the management entities. Although, the sciences are essential in providing information for coastal and ocean managers, there often tends to be little ongoing communication between scientists and managers.

5. **International integration:** Integration among nations is needed when nations border enclosed or semi-enclosed seas or there are international disputes over fishing activities, trans boundary pollution, establishment of maritime boundaries, passage of ships, and other issues. Although in many instances, coastal and ocean management questions are within the purview of national and sub-national governments within national jurisdiction area, in many other cases, nations face Ocean and coastal management problems their neighbors and thus must seek internationally negotiated solutions.

III. MANAGEMENT

Management is a **continuous, interactive, adaptive, participatory process** comprised of a set of related tasks, all of which must be carried out to achieve a desired set of goals and objectives, however those goals and objectives are established and specified. Management of coastal areas must deal with at least the following factors:

- Multiple and conflicting demands on the coastal area, stemming from within, and external to, the designated management area;
  - Human population increases and associated demand for economic development within the coastal area, including, e.g., the filling of shallow, near shore waters for use for various purposes;
  - The stochastic (probabilistic) nature of natural events, including the frequency distribution of quantity and quality of freshwater inflows to the ICAM and the frequency distribution of intensity and duration of storm events and other natural phenomena;
  - Rate and magnitude of natural processes, e.g., shoreline erosion and accretion, ecological succession, land subsidence or uplift;
  - Limited resources for management, because of multiple demands by society for outputs and services (other than those derived from management of coastal resources);
  - Uncertainties about all of the variables involved in ICAM, e.g., governmental policies and programs, demographic and economic conditions and trends, social tastes and attitudes, external and internal demands on coastal resources, technological changes, and factor prices; and
  - Potential climate change and its long-term effects on coastal ecosystems and on human activities in the ICAM.
- Management of coastal areas takes place in various contexts.

IV. INTEGRATED COASTAL AREA MANAGEMENT (ICAM)

The coastal zone is often under heavy stress. Physical processes of erosion and sedimentation affect it, pollutants are spreading in the environment, and Man has ever higher requirements for using the coastal area for economic

activities as well as recreation. The basis for a sustainable management of the coastal area and its resources is an in-depth understanding of the environment itself. This includes the physical environment, biology, chemistry, social and economical factors, all in a spatial perspective provided by geography. A good knowledge of Coastal engineering alone is not enough for running a project successfully in coastal area. A clear cut management strategy is also essential. For example, if one builds an artificial port in a site where the long shore sediment transport is significant, then it is essential to have a strategy of how to tackle the erosion and accretion problem due to the intended project. The project should not cause damage to neighbouring properties or cause unexpected problems to the environment. The below picture represents the extension of Dubai City,



Major Functions of Integrated Coastal area Management:

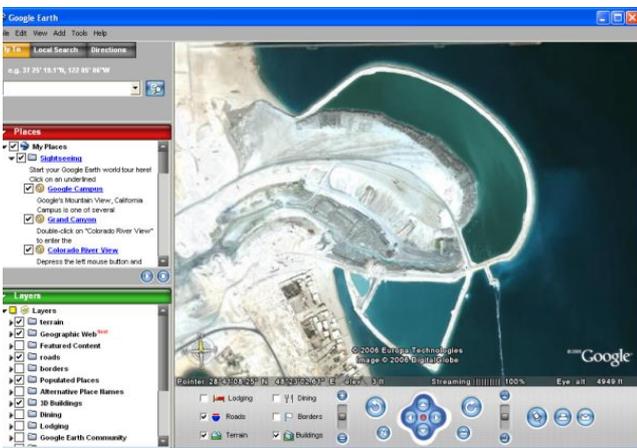
<b>Area Planning</b>	Plan for present and future uses of coastal and marine areas; provide a long term vision.
<b>Promotion of Economic Development</b>	Promote appropriate uses of coastal and marine areas (e.g., marine aquaculture, ecotourism).
<b>Stewardship of Resources</b>	Protect the ecological base of coastal and marine areas; preserve biological diversity; ensure sustainability of uses.
<b>Conflict Resolution</b>	Harmonize and balance existing and potential uses; address conflicts among coastal and marine uses.
<b>Protection of Public Safety</b>	Protect public safety in coastal and marine areas typically prone to significant natural, as well as human-made, hazards.



<b>Proprietorship of Public Submerged Lands and Waters</b>	As governments are often outright owners of specific coastal and marine areas, manage government held areas and resources wisely and with good economic returns to the public.
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**V. MANAGEMENT OF COASTAL AREAS**

It involves multiple problems, multiple desired (and often conflicting) outputs from and uses of coastal resources, differential productive capacities over space and time within any designated coastal area, greater or lesser linkages to upstream areas and beyond, multiple constituencies, and multiple institutions with varying responsibilities for aspects of management. The coastal system to be managed is comprised of a complex, dynamic web of interrelationships among human activities, societal demands, natural resources, and external natural and human inputs. The system is driven by human activities in terms of societal demands for use of the natural resources of the coastal area to produce desired products and services, e.g., seafood, marine transportation, and recreation. One of the demands of society might be to restore and/or maintain a coastal ecosystem in its "natural" state, i.e., as a protected area. Societal demands for outputs from a coastal area usually exceed the capacity of the area to meet all of the demands simultaneously. Coastal resources, e.g., fish and coral reefs, are often "common property resources" with "open" or "free" access to users. Free access often, if not typically, leads to excessive use of the resource, e.g., over-harvesting of fisheries, and degradation or exhaustion of the resource, e.g., coastal pollution and habitat degradation. Because not all of the outputs from coastal resources can be expressed in monetary terms, free markets cannot perform the allocation tasks. Some process must be used to decide what mix of outputs will be produced. That process is **integrated coastal area management (ICAM)**. The below picture represents the Geographic view of Kuwait,



**Some Factors Relevant for Defining the Context of ICAM:**

Category	Description of Effect on Context
1. Management Goals	In relation to: (1) level of sophistication i.e., degree of detail of output; (2)scope of planning, i.e., time horizon, number of variables considered; (3)constraints imposed on planning, i.e., number of inter-

	regional economic effects considered
2. Government and/or Institutional Structure	In relation to:(1) institutions responsible for ICM analysis and management over time; (2) institutional capacity, i.e., numbers, types, and experience of professionals in relevant institutions; (3) Implementation "style," i.e.,, emphasis on use of different implementation tools; (4) importance of public participation in decision process; (5) sources of financing for implementation management strategies
3. Resources Available for Analysis	With respect to: (1) professional personnel available; (2) time available; (3)analysis tools, e.g., models; (4) equipment, e.g., computing services and monitoring tools
4. Data Availability	In relation to(1) natural systems, e.g., surface waters, ground water, atmosphere, ecological processes; (2) pollutant generation and discharge, i.e., pollutant generation coefficients, spatial and temporal pattern of activities, technological characteristics of activities; (3) pollutant discharge reduction costs
5. Existing Perceptions in Coastal Area	As perceived by individuals and groups in the area in relation to: (1)difference between what is perceived as a severe coastal management problem and reality; (2) what appears to be logical, reasonable, efficient, and effective ICM strategies compared to what is; (3) differences between actual and desired conditions
6. Regional Boundaries	With respect to: (1) natural or ecological systems boundaries; (2) political jurisdictions; (3) economic boundaries; (4) service units, e.g., water districts; and (5)scale
7. Physiographic, Hydrographic, and Climatic Characteristics	With respect to: (1) physiographic, i.e., mountains, plains, and combinations; (2) hydrographic, i.e., surface waters and groundwater; (3) climatic, i.e., temperature, sunlight, and precipitation
8. Characteristics of Animals and Habitats	With respect to abundance, life histories, and biographies

**VI.CONCLUSION**

The main idea of integrated coastal area management (ICAM) is economic development to improve the quality of the people life and environmentally appropriate development with the equitable development. Where as coasts become more developed, the vulnerability component of the equation increases as there is more value at risk, to the natural hazards.



To overcome the hazards like erosion, when the human interact with that coastal environment by developing it, create value in that area. This paper reviews the history of integrated coastal area management and make decision to develop an ICAM program.

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