



Coastal Zone Management in Lebanon

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The Lebanese Coast: General description

- 220 Km along a NS axis.
- Narrow continental shelf.
- Straight coastline.
- Few bays, headlands & river deltas.
- ~ 80% rocky; ~ 20% sandy.
- Rich in archeological sites/cultural heritage.
- Key drinking water sources.
- 16-17°C in February; 28-29°C in August.
- Salinity ~ 39‰.
- Waves strongest January-March,
- Offshore currents: NE.
- Eddy currents: clockwise, leading to sand accumulation in bays/harbors.



The Lebanese Coast: The Problems

- Legacy of the successive & on-going wars.
- Lack of local, regional & national land use plans.
- Poorly defined national planning authorities.
- Overlapping & uncoordinated environmental management responsibilities.
- Outdated & inconsistent environmental legislation coupled with severe lack of enforcement of laws: **SEA and EIA Laws and Decrees passed.**
- Represents 8% of the total area of the country.
- Host to ~33% of the total built-up area & ~80% of the total population.
- Average density: 1549 persons/km² compared to 364 persons/km² on national scale.
- ~70% of industrial zones located on the coast.
- Sea filling with urban waste and quarry products.
- Destruction of habitats, displacement of species, invasives.

ICZM initiatives

- Several initiatives aimed at introducing ICZM.
- Some addressed ICZM in the perspective of land-use planning only.
- CDR has been preparing to launch a Master Plan for the whole Lebanese Coast in coordination with the MoPWT.
- The MoPWT established a committee to develop an IMP.
- In the last decade was marked by several ICM projects.

ICZM initiatives

- Project for the Conservation of Wetlands and Coastal Ecosystems in the Mediterranean region (MedWetCoast); 2001-2006.
- Improving Coastal Land Degradation Monitoring in Lebanon and Syria (CoLD) project; 2002-2004.
- Coastal Area Management Program of the Mediterranean Action Plan (CAMP) project; 2002 -2003.

Integrated Management of East Mediterranean Coastlines (IMAC) Project



- Funded by the European Commission under the Third Regional Environment Programme in the Mediterranean (SMAP III).
- Consortium of 4 partners lead by the IOE-UOB.
- Goal: Launch the process of sustainable development of coastal zones with positive effects for standard of living and ecosystem health as well as promote tools for and raise awareness of the benefits of ICM.



ΔΙΠΕ - INIER



IMAC: Main outputs

- Status Report for the coast of North Lebanon.
- Stakeholder analysis of the main actors in ICZM in Lebanon.
- Report on Conflicting Uses of coastal resources.
- Economic Valuation of the CZ of the Mohafaza of North Lebanon.
- Assessment of the Institutional and Legal Setting.
- A Strategic Action Plan for Wise Use of the Coastal Resources of the Coast of North Lebanon.
- Overall awareness raising about the importance of ICZM.

Lebanese Northern Shoreline Changes between 1962 and 2007

Erosion: 931000 m²
Accretion: 30000 m²
Sea filling: 1759000 m²



Legend

— Shoreline of 1962
— Shoreline of 2007

0 3.75 7.5 15 km

Shoreline of South Tripoli/Qalamoun Changes between 1962 and 2007



Legend

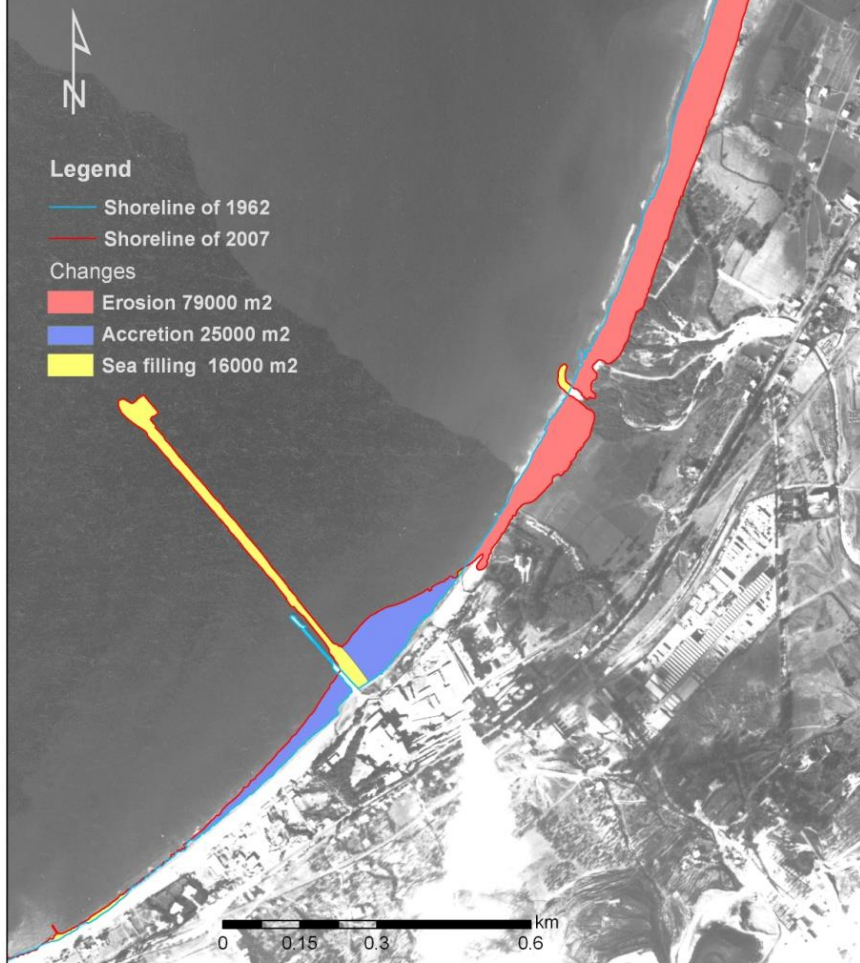
— Shoreline of 1962
— Shoreline of 2007

Changes

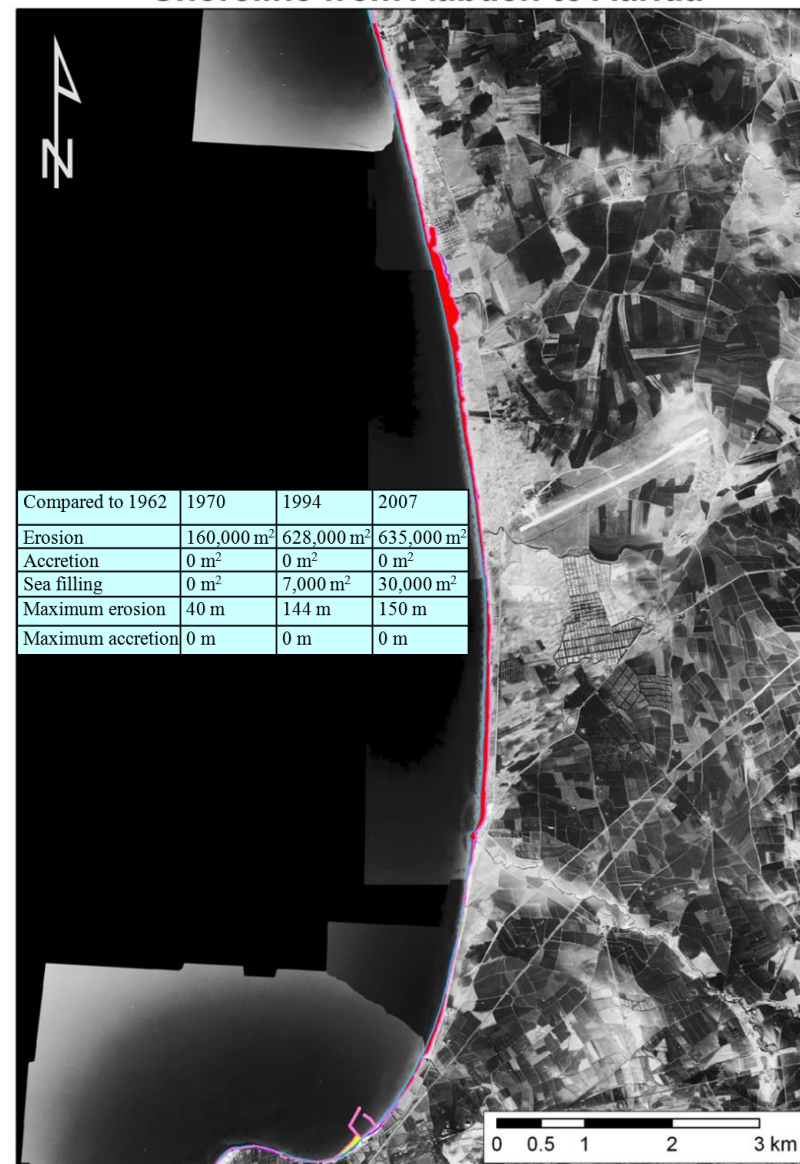
■ Erosion 15000 m²
■ Sea filling 353000 m²

0 0.3 0.6 1.2 km

Shoreline of Chekka/El Heri Changes between 1962 and 2007



Shoreline from Aabdeh to Aarida

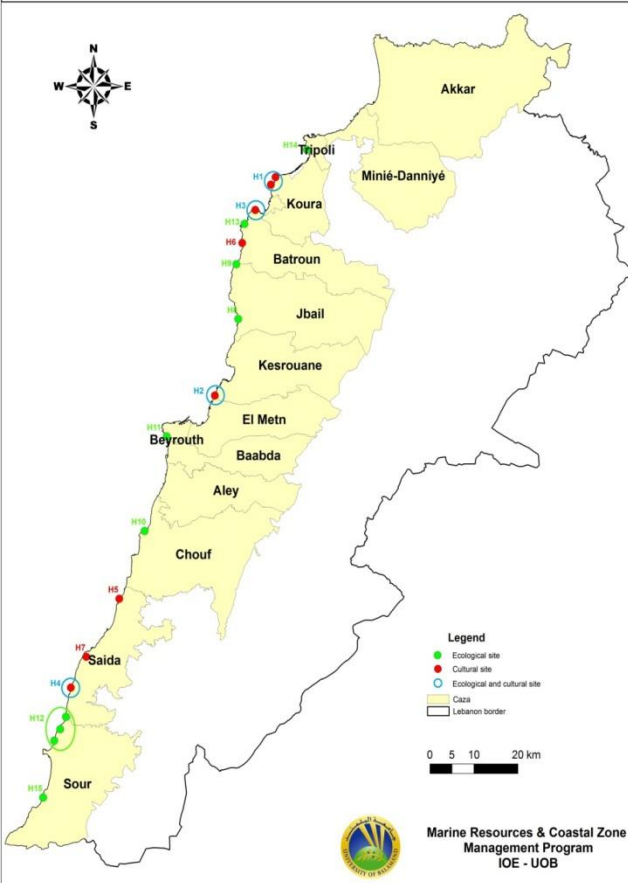


Environmental Resources Monitoring In Lebanon (ERML) project

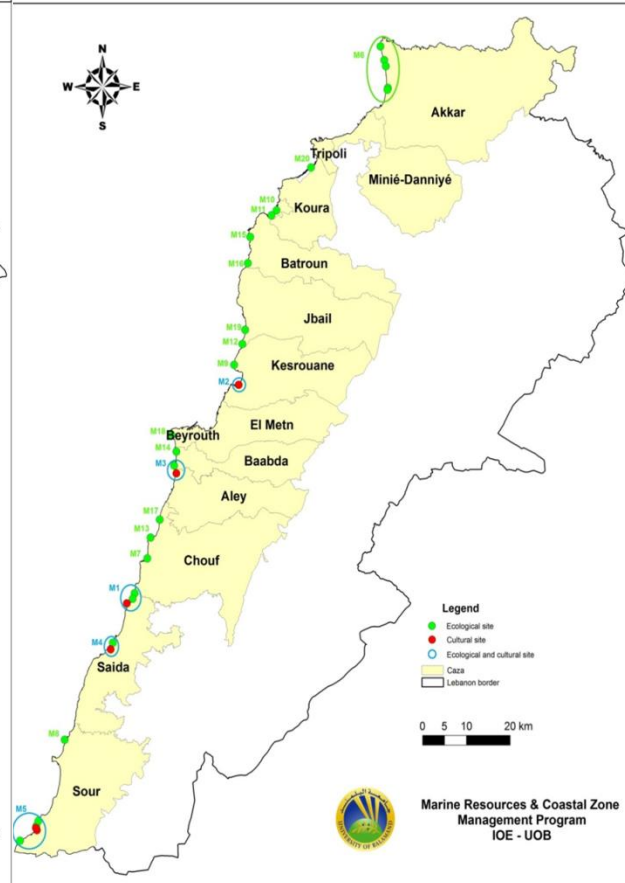
- The Government of Greece allocated USD 1.64 million for implementation of an Environmental Monitoring Project in response to the Israeli War on Lebanon, 2006.
- Administered by UNEP in close cooperation with UNDP Lebanon and close consultation with the MOE.
- Objective: Improve the understanding of the environmental quality in Lebanon and understand its implications for the Lebanese population.
- Three main reports:
 1. Sensitive Areas;
 2. Analysis of legislative and legal status of ICZM;
 3. Landuse/landcover change and socio-economic status of the coastal community.

ERML: main outputs (for ICM)

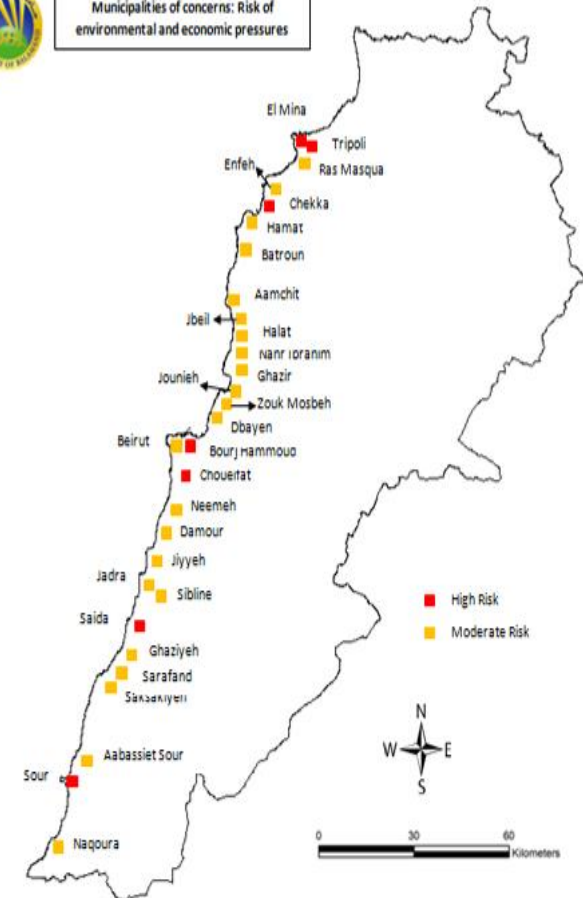
High priority sites



Medium priority sites



Municipalities of concerns: Risk of environmental and economic pressures



National Artisanal Fisheries Dependent Data Collection Program for Lebanon Project

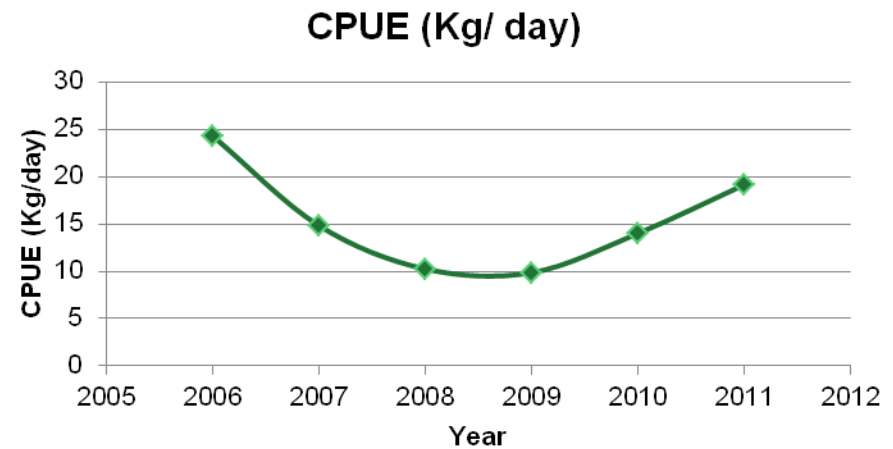
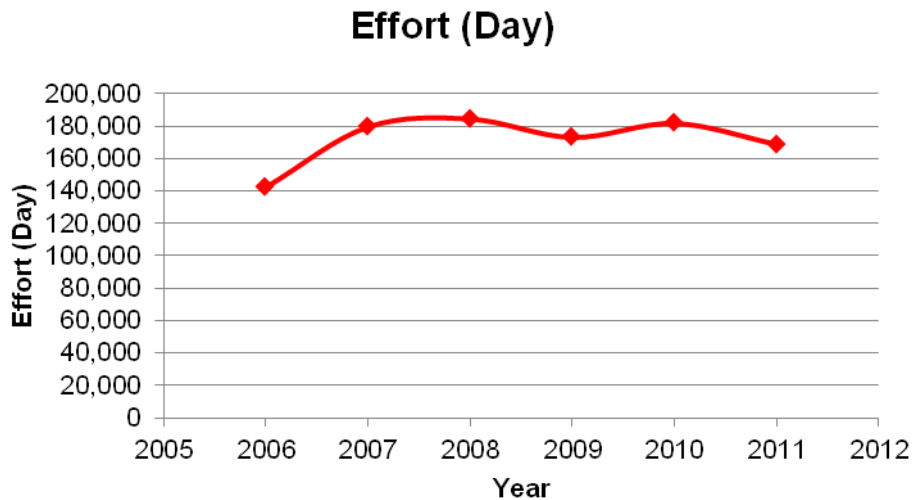
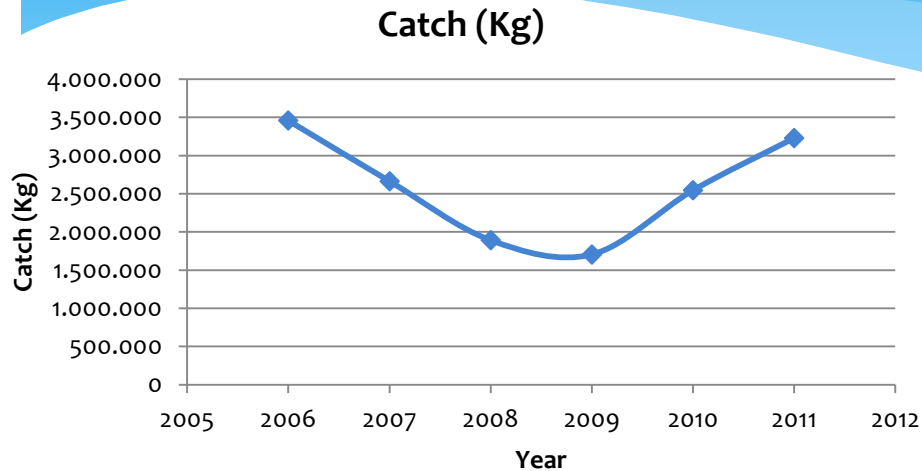
- Funded by: FAO-EastMed project.
- LOA agreement with the University of Balamand.
- For the benefit of the Ministry of Agriculture.
- Main output: Fisheries Catch & Effort monitoring web utility-FLOUCA Web.
- FLOUCA Web objectives: To establish long-term monitoring of commercial fish species landings and effort to contribute to developing appropriate management plans based on scientific data in order to sustainably benefit from the resource.

FLOUCA-Web

- Handles Catch/Effort data with the purpose of regularly producing monthly estimates on catch, fishing effort, prices, values and average fish size.
- Establish long-term monitoring of commercial fish species landings and effort.
- Contribute to developing appropriate management plans based on scientific data in order to sustainably benefit from the resource.
- Functional in North Lebanon since 2006.
- Functional on National scale since 2014.
- Toxicity of Tetrodotoxin in the Puffer fish *Lagocephalus sceleratus*.
- Biological and stock assessment studies based on FAO methodologies.

FLOUCA-Web: Ex. Outputs

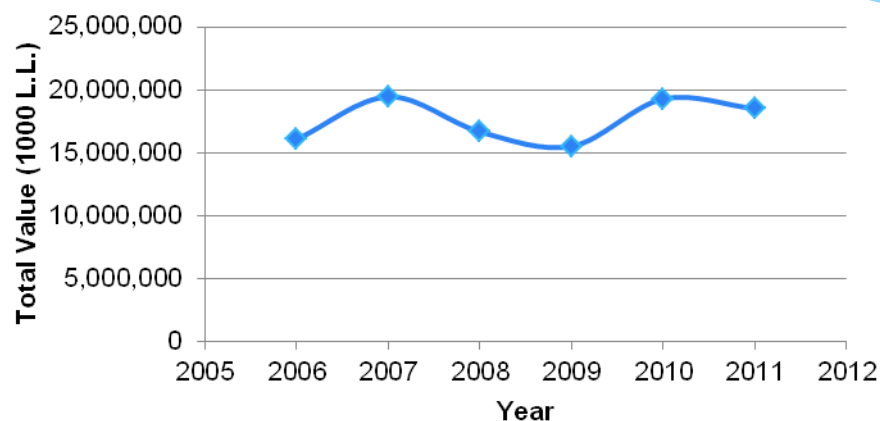
(North Lebanon)



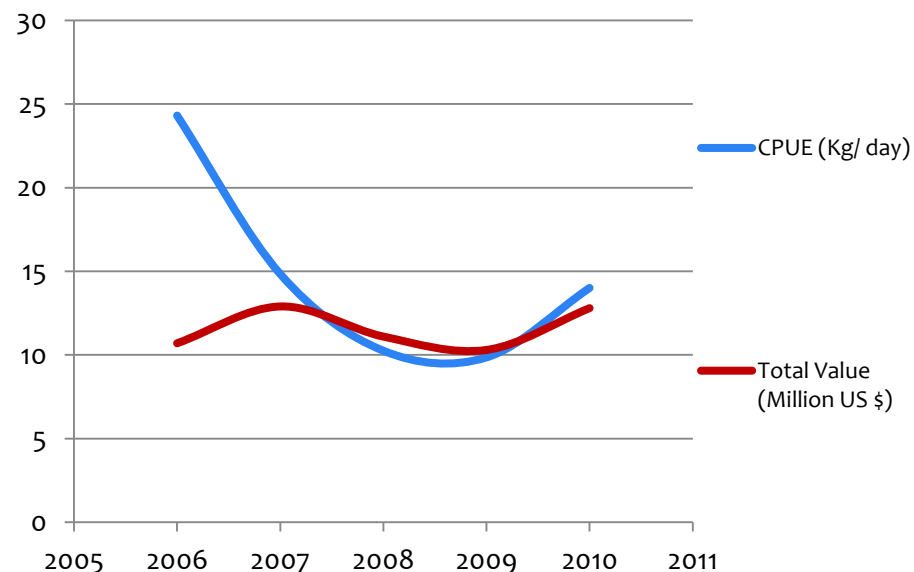
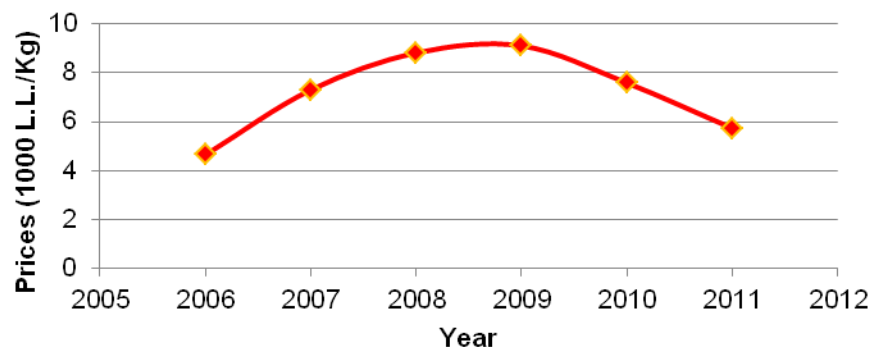
FLOUCA-Web: Ex. Outputs

(North Lebanon)

Total Value (1000 L.L.)



Prices (1000 L.L./ Kg)



People for Ecosystem-based Governance in Assessing Sustainable development of Ocean and coast (PEGASO) project

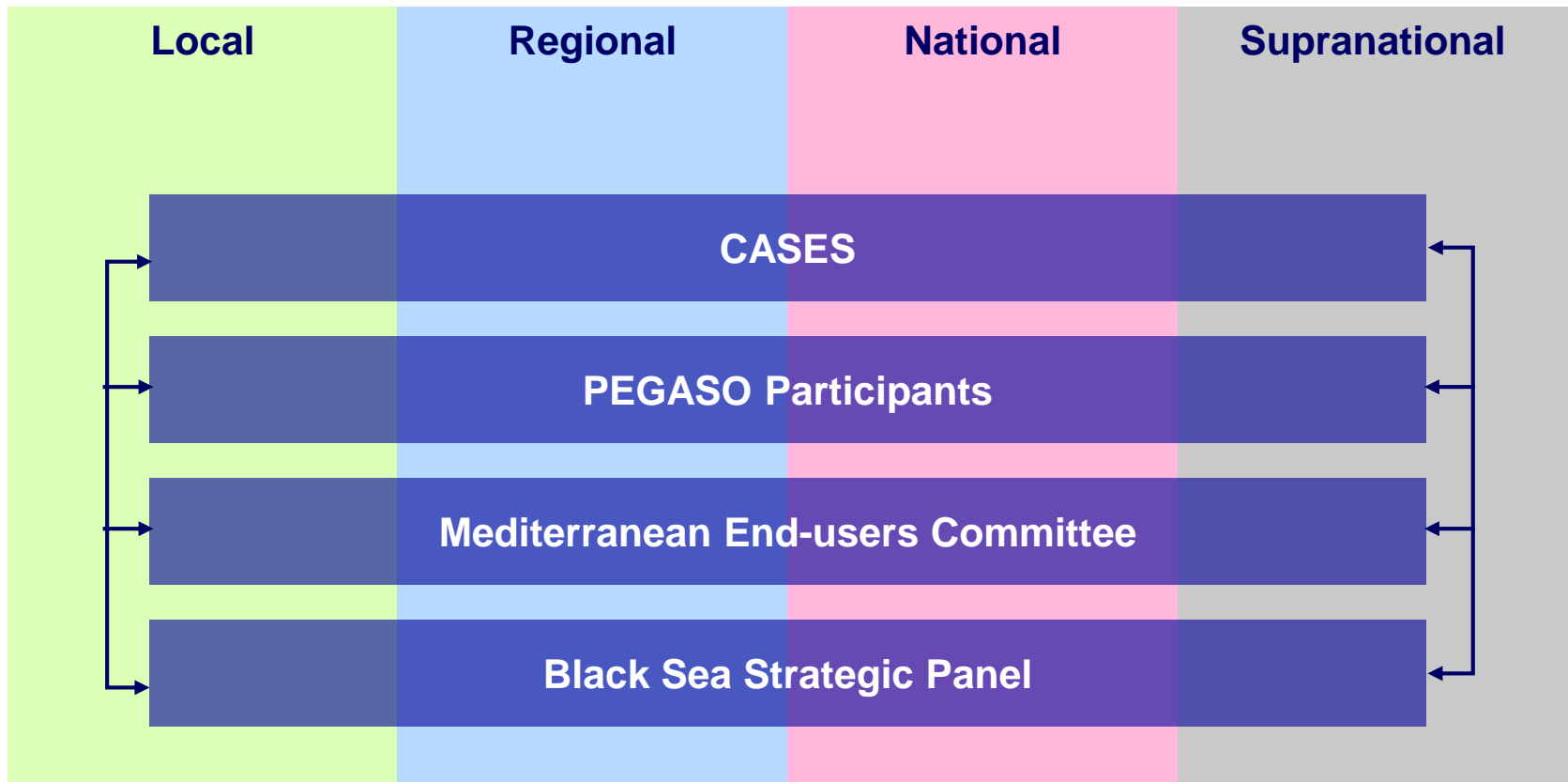
- Start Date: 2010.
- End Date: 2014.
- Project coordinators: UNIVERSITAT AUTONOMA DE BARCELONA.
- Partners: 23 institutions (Mediterranean and Black Sea).
- Objective: to build on existing capacities and develop common novel approaches to support integrated policies for the coastal, marine and maritime realms of the Mediterranean and Black Sea Basins in ways that are consistent with and relevant to the implementation of the ICZM Protocol for the Mediterranean.

www.pegasoproject.eu

PEGASO: ICZM Governance Platform

Bridging science & decision-making

Platform components

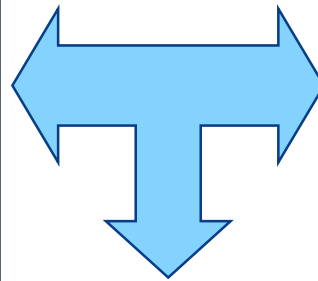


PEGASO: ICZM Governance Platform

Bridging science & decision-making

KNOWLEDGE

- Provide scientific data and information needed by managers
- Help understand the functioning of ecosystems
- Allow managers to forecast the consequences of their actions



GOVERNANCE

- Examine the interests of various stakeholders and the potential to avoid conflicts
- Facilitate & orient decision-making
- Help apply the enforcement mechanisms, in our case the ICZM Protocol

ADAPTIVE MANAGEMENT

- Science-based process
- Participatory process
- Institutional process
- Political process
- Strategic process

PEGASO: ICZM Governance Platform

Bridging science & decision-making

- Help finding good ICZM solutions for all levels (from local to transboundary).
- Assess the readiness/preparedness of the Mediterranean countries to implement the ICZM Protocol.
- Assess the willingness/readiness to prepare a similar instrument for ICZM in the Black Sea.
- Offer solutions for smoother implementation of the Protocol.
- Be structured to continue after the project is ended.


PEGASO: Collaborative Application SitES (CASES)

- CASES are characterized by different scales, coastal issues, expertise and experiences.
 - Objective: To test and validate the assessment tools at regional and local scales to understand both global and cumulative local trends and how they interact in specific coastal and marine regions.
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- | | |
|------------------------------|--|
| • Aegean Sea Islands, Greece | • Guria Coastal Region, Georgia |
| • Al Hoceima coast, Morocco | • Nile delta, Egypt |
| • Bouches de Rhône, France | • North Adriatic Sea, Italy-Slovenia-Croatia |
| • Dalyan-Köycegiz, Turkey | • North Lebanon Coastal Zone, Lebanon |
| • Danube Delta, Romania | • Sevastopol Bay, Ukraine |

PEGASO CASES-NLCZ: Characteristics

- 100 km; 450.000 inhabitant (80% of the Lebanese Northern population).
- Coastal municipality limits.
- Territorial waters: up to 6 nautical miles.
- 3 bays and 2 headlands.
- Natural resources.
- Prevailing uses: industry, tourism, agriculture, fisheries and residential

Land Uses

-  Agricultural Sector
-  Natural Reserve
-  Tourism Sector
-  Industrial Sector
-  Urban Sector

Akkar Region

It is considered the most rural district of Lebanon. The main crops in the region are: olives, cereals and vegetables

Tripoli

It contains coastal beaches as well as a variety of religious and historic buildings which are combined with modern architecture.

Palm Island

Declared reserve in 1992, Palm Island is one of the main tourist attraction in North Lebanon. It offers different recreational activities such as swimming, diving and hiking

Palm Island Natural Reserve

▲ Nahr al-Bared Palestinian Refugee Camp

▲ Beddawi Palestinian Refugee Camp

Tripoli

Wetland

Declared RAMSAR Site in 1999

Ras ech Chaqaa Reserve

Chekka

Selaata

Batroun

Cement Factories

There are 2 cement factories located in the region. Both supply the Cypriot, Syrian and Iraqi market

Chemical Company

Production of fertilizers mainly intended for export to Europe

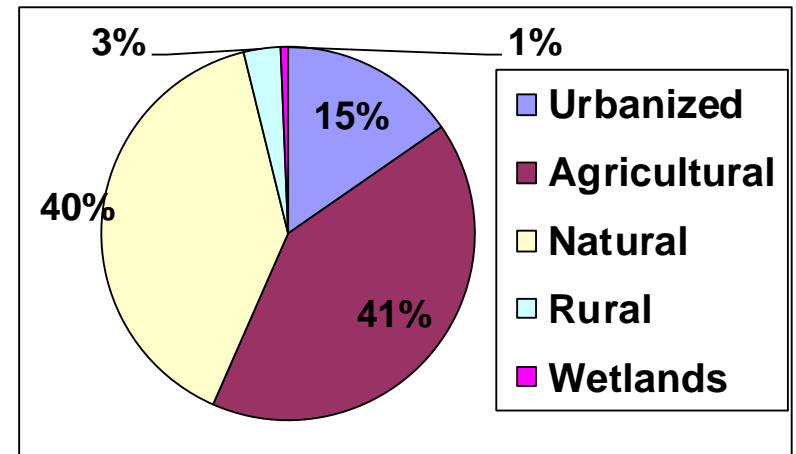
Batroun

It is one of the most visited coastal towns . It offers a variety of tourist facilities such as hotels , resorts, restaurants, shops and nightclubs

PEGASO CASES-NLCZ: Characteristics

Land use

- Urbanized areas: 8,870 Ha
- Agricultural lands: 23,838 Ha
- Natural/undisturbed areas: 22,881 Ha
- Rural: 1,846 Ha
- Wetlands: 372 Ha



PEGASO CASES-NLCZ: Main achievements

- Calculation of indicators
 - Area of built-up space in the coastal zone.
 - Coastal erosion and coastal instability.
 - Value added per sector.
 - Number of enterprises.
- Bayesian Belief Network (BBN model) for “Controlling artificialization”
 - Study each component of “artificialization”.
 - Use a tool that helps in the representation of relationships between variables.
 - Identify the drivers and the afferent variables.
 - Address and present it in a fashion understandable to decision-makers.
- Coastal Forum concept.

Legal status of ICZM in Lebanon

Binding international conventions

- Lebanon has ratified/acceded/joined a number of international conventions of relevance for ICZM.
- Conventions binding for Lebanon put a set of general obligations on the Government.
- **Protocol on Integrated Coastal Zone Management in the Mediterranean. Ratification: Decree n°639 dated 18/09/2014**

Project	Date	Funded by	Executed by	Objective
Coastal Area Management Program of the Mediterranean Action Plan (CAMP)	2003	UNEP	MOE	Draft law on ICZM
Strengthening the Environmental Legislation Development and Application System in Lebanon (SELDAS)	2004	European Commission (EC) Life Third Countries Program	MOE, UNESCO-Cousteau Ecotechnie Chair (UOB)	Classification of all existing environmental legislation by media and sectors
Assessment of the Institutional and Legal Setting for CZM in Lebanon developed within the IMAC project	2007	SMAP III Programme of the EC	IOE-UOB	Assessment of coastal zone management from a legislative perspective
Analysis of the Institutional and Legal Frameworks Related to Management and Monitoring of Coastal and Marine Areas. Developed within the context of the ERML	2012	Government of Greece executed by MOE under the management of UNEP in collaboration with UNDP	IOE-UOB	An update of the IMAC Legal Study

National consultancy for the identification of legal, policy and institutional gaps and policy reforms drafted for marine and coastal biodiversity protection Project

- Larger project: Market Policy and Legislative Development for Mainstreaming the Sustainable Management of Marine and Coastal Ecosystems in Lebanon.
- Expected Output (s): Draft updated law on ICZM and Draft updated strategy on ICAM.
- Hosted by: MOE.
- Implemented by: MRCZM-IOE-UOB.
- Start Date: 07/08/2014
- End Date: 19/03/2015

Outputs

- Report on the existing policies and legislation related to the protection of marine and coastal areas in Lebanon.
- Assessment of existing policies and legislation report.
- Draft Law on ICZM.
- Draft Strategy on ICZM.
- **Updated Draft Law on ICZM ready to be submitted to Parliament.**
- Updated Draft Strategy on ICZM.

