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Klumb-Oliveira & Souto (2015) – Integrated Coastal Management in Brazil: analysis of the National Coastal Management Plan and selected tools based on international standard. *Journal of Integrated Coastal Zone Management / Revista de Gestão Costeira Integrada*, 15(3):311-323.
Supporting Information

# Supporting Information

**Socioeconomic indicators and parameters of the ICAM Handbook.**

| **SE1 – Total Economic Value** | **SE2 – Direct Investiment** |
|---|---|
| Value of living resources<br>Value of non-living resources<br>Value of non-consumptive uses<br>Economic value-added<br>Value of exports<br>Management and administration costs | Investiment by government<br>Private sector investment<br>Foreign direct investment |
| **SE3 – Total employment** | **SE4 – Sectoral diversification** |
| Number employed<br>Employment payroll value<br>Same sub-categories as total economic value (SE1) | Land-based activities dependent on the marine environment<br>Activities in the Integrated Coastal and Ocean Management (ICOM) area out to the boundary of the EEZ or the continental shelf<br>Non-living resource exploitation<br>Non-consumptive use |
| **SE5 – Human pressures on habitats** | **SE6 – Pollutants and introductions** |
| Land use/ land cover patterns and composition<br>Population density<br>Extent of hard-surface areas<br>High-impact fishing gear/ pratices<br>Dumped and dredged material | Population served by wastewater treatment<br>Volume, number and type of point-source discharge<br>Non-point-source nutrient loading<br>Discharged sediments and nutrients<br>Volume of ballast and bilge discharge<br>Litter and debris |
| **SE7 – Disease and illness** | **SE8 – Weather and disaster** |
| Fecal coliforms counts<br>Days of beach closure<br>Extent of contaminated species<br>Extent of contaminated water<br>Seafood-transmitted illnesses | Economic value of loss from marine weather-related events<br>Lives lost from weather and marine disasters |
| **SE9 – Population dynamics** | **SE10 – Marine dependency** |
| Degree of public access<br>Resident and total (seasonal) population | Economic dependency<br>Social dependency |
| **SE11 – Acesso público** | |
| Physical access<br>Economic access | |
| **SE12 – Tradicional knowledge, innovations and pratices/ cultural integrity** | **SE13 – Protection and coastal heritage resources** |
| Linguistic diversity<br>Tradicional land and water tenure<br>Lands and waters managed or co-managed by indigenous and local communities | Number and type of coastal heritage resources identified and assessed<br>Percentage of coastal heritage resources that are protected<br>Percentage of coastal heritage resources that are vulnerable or |

| | |
|---|---|
| Movement away of indigenous and local communities | being damaged because of natural and human factors |
| Establishment and implementation of favourable government policies and programmes | Use of cultural heritage resources and most visited sites |
| Access to traditional coastal and marine resource rights | |
| Manifestations of tradicional knowledge | |

## Supporting Information

**Ecological indicators and parameters of the ICAM Handbook.**

| **E1 – Biological diversity** | **E2 – Distribution of species** |
|---|---|
| Diversity of communities<br>Diversity of populations<br>Diversity of species<br>Genetic diversity<br>Invasive species / pests | Horizontal distribution (patchiness, aggregation)<br>Vertical distribution (food web/ trophic structure) |
| **E3 – Abundance** | **E4 – Production and reproduction** |
| Biomass (key populations)<br>Number of individuals (marine mammals)<br>Density (plants, benthic organisms) | Primary productivity: quantity (biomass) and quality (for example, habitats)<br>Secondary productivity<br>Life history stages<br>Reproductive parameters<br>Spawning survival rates<br>Mean generation time (longevity) |
| **E5 – Trophic interactions** | **E6 - Mortality** |
| Complexity of food web<br>Key predator/ prey interactions<br>Keystone species<br>Size spectra | Fishing mortality<br>Incidental mortalities (by-catch)<br>Natural mortality (predation, diseases) |
| **E7 – Species health** | **E8 – Water quality** |
| Species at risk of extinction<br>(Bio)acumulation of toxic compounds<br>Diseases and abnormalities<br>Seafood quality | Water column properties<br>Oceanographic processes and variability<br>Sedimentation<br>Pollutants and contaminants<br>Eutrophication parameters |
| **E9 – Habitat quality** | |
| Habitat types<br>Habitat alteration<br>Sea level changes<br>Landscape and bottomscape integrity<br>Sediment quality (nature/ properties of sediments) | |

# Supporting Information

**Dimensions and parameters of the Orla Project.**

| Social Dimension | Economic Dimension |
|---|---|
| Presence of traditional communities | Estate pressure |
| Presence of informal low-income settlements | Agricultural use |
| Concentration of households summerhouse | Use for plant extraction |
| Infrastructure, leisure and tourism | Use of fisheries resources |
| Urbanization or urban coverage | Use for mariculture |
| Households with water | Use for waterway or port traffic |
| Households with sewer service | Industrial use |
| Households with garbage collection | Mineral exploitation |
| Households with electricity | Oil activities |
| Ways to access | Tourist activities |
| **Environmental Dimension** | |
| Native vegetation | |
| Scenic values | |
| Ecosystem integrity | |
| Fragility of ecosystems | |
| Presence of protected areas | |
| Bathing condition | |
| Environmental degradation | |
| Presence of effluents | |
| Presence of solid waste on the edge | |
| Presence of irregular constructions | |
| Potential for mineral recovery | |
| Agricultural suitability | |
| Potential plant extraction | |
| Fishing potential | |
| Suitability for mariculture | |

# Supporting Information

**Topics and parameters of the Macrodiagnostic.**

| **Oil and gas** | **Population dynamics** |
|---|---|
| Activities of extraction of natural gas production and oil | Rural density (hab./km$^2$)<br>Growth rate of the urban population |
| **Geomorphology** | **Biodiversity** |
| Dune fields<br>Coastal plain<br>Fluvial plain<br>Coastal tablelands<br>Mangrove plain<br>Oceanographic data (direction of waves, longshore drift, winds and coastal mobility) | Biological importance (extreme, very high, high, insufficiently know)<br>Marine turtles<br>Brazilian manatee<br>Occurrence of Humpack Whale<br>Emerged reef<br>Submerged reef<br>Bank of sponges |
| **Social Risk** | **Technological Risk** |
| Potential of social risk (very high, high, medium, low, very low)<br>Shortage of households in subdistricts (number of households, sewage, garbage collection) | Potential technological risk (very high, high, medium, low)<br>Total population<br>Extraction activities and production of natural gas and oil (production fields, exploration blocks, units of natural gas production, refineries) |
| **Natural Risk** | **Coastal management** |
| Degree of natural risk (very high, high, medium, low, very low)<br>Oceanographic data (direction of waves, longshore, marine currents, tides, winds and coastal mobility)<br>Population dynamics<br>Rural density (inhabitants/ km$^2$)<br>Growth rate of urban population | Management tools (Agenda 21 Plan, Municipal Environmental Council, Orla Project)<br>Total population (by size class)<br>Protected natural áreas (Sustainable Use, Full protection) Situation in the EEZ coastal sector<br>Indian Reservation<br>Temporary exclusion of oil and gas |