Series of
Thematic Studies 1

EUROCLIMA

Methodological Guide

Climate Change and Risk Management: Vulnerability Analysis of Coastal Marine Infrastructures in Latin America

This summary *sets out the main ideas covered in the Guide, that takes the experiences, lessons learned and best practices in the beneficiary countries of the EUROCLIMA programme in order to estimate and reduce the vulnerability of coastal marine infrastructures in the face of climate change. Furthermore, it identifies sensitive areas within the framework of land use planning. The principal product is a Guide that proposes methodological tools for assessing the vulnerability of these infrastructures in Latin America.*

The conceptual framework of the study is made up of key concepts, such as hazard, risk, vulnerability, coastal area and infrastructure. The analysis of the principal initiatives, studies, experiences and practices carried out in Latin America on vulnerability and climate change shows that some notable initiatives have been implemented. These experiences are brought together using a risk management approach:

- Identification and characterisation of the events that represent a potential threat.
- Evaluation of the physical susceptibility level of the coasts to the impact of the potential threats.
- Identification of the elements at risk (physical, socio-economic, environmental, etc.).
- Definition of qualities and value of elements at risk that allow determination of the probable impact (level of damage) in case of materialisation of the identified threat.

The document review for this study also provided evidence of the low level of articulation and dialogue between the actors involved in the different experiences, thus limiting the potential to benefit from the progress achieved in each Latin American country.

The Guide sets out a progressive methodology, a multiscale analysis on three levels: national, sub-national and local. Each one of these delivers different and complementary products.

1st phase, sub-national scale: The topographical and geomorphological characteristics are mapped in order to identify coastal

European Commission

sectors that would be most sensitive to being affected by physical instability (erosion, sedimentation), to flooding and to hurricanes and/or tropical storms.

2nd phase, sub-national scale: The coasts are classified according to their level of susceptibility to potential threats. Information on physical susceptibility is combined with the level of exposure to coastal phenomena.

Mapping is required of the magnitude and variability of the processes that determine the potential threats such as erosion, increase in sea level, tides, waves and storms, vertical movement of the earth's crust, etc.

3rd phase, local scale: a detailed evaluation is made of the physical susceptibility (topography and geomorphology) of the coast and exposure level to potential threats (ocean dynamics, climate, anthropogenic action, fluvial dynamics).

The prioritization of areas that require detailed studies will take into account the results of the second phase and the criteria relating to the nature and assessment of the elements at risk (population, infrastructure, etc.), as a basis for the final design and selection of responses to the identified risks.

Recommendations:

Knowledge Production:

- It is essential to conduct coastal marine infrastructure vulnerability studies. This guide is expected to provide an input for progressing in this task.
- It is recommended that a platform is made operational and maintained for compilation, exchange and dissemination which, in the form of an Observatory of Initiatives of Interest, could be hosted in an international or regional body.
- Instances of discussion and exchange between scientists and technicians on a regional level must be increased to facilitate dialogue.

Risk Management:

- Progress must be made towards integrated management of coastal areas, for which an agency must be created in the countries with contributions from academia, the business sector, NGOs and civil society.
- As a preferred tool, the implementation of Observatories is suggested that enable monitoring of processes, performance levels and effects of actions, within an inter-institutional and integrated coastal area management framework.
- It is suggested that instances of political-technical/ scientific exchange and dialogue are increased to share strategies and response modes between countries.

Thematic study N° 1: **Methodological Guide**

Study objective: To provide methodological instruments to governments in Latin America to facilitate the identification of the vulnerability of the physical infrastructure of coastal marine areas to climate change and facilitate the identification of adaptation options.

Authors: Guillermo Dascal, Rubén Vargas.

The Focal Points in the 18 countries that participate in the Programme, defined the topics and objectives of these thematic studies according to their needs as policy makers; they also provided key data, reviewed and corrected reports.

Supervision: Jan Karremans (Technical Assistance), Catherine Ghyoot (EuropeAid/G/2).

The EUROCLIMA thematic series can be downloaded at: **www.euroclima.org**

The points of view expressed are those of the authors and do not necessarily reflect the points of view of the European Commission.

EUROCLIMA is funded by the European Union

Comisión Europea

Further Information
www.euroclima.org
www.ec.europa.eu/europeaid
info@euroclima.org