



Project number: INCO-CT-2004-003715

Project acronym: ECOMANAGE

Project title: Integrated Ecological Coastal Zone Management System

Instrument: Specific Targeted Research Project (STREP)

Thematic Priority: Specific research and technological development programme *Integrating and strengthening the ERA* (the “specific programme”)

FINAL PLAN FOR USING AND DISSEMINATING THE KNOWLEDGE

Period covered: from 1st December 2006 to 31st May 2008

Date of preparation: 11th September 2008

Start date of project: 01 December 2004

Duration: 42 months

Project coordinator name: Professor Ramiro Joaquim de Jesus Neves

Version: 1

Project coordinator organisation name: Instituto Superior Técnico

DOCUMENTATION FORM

Project name:	ECOMANAGE - Integrated Ecological Coastal Zone Management System
Project reference:	(FP6) INCO-CT-2004-003715
Duration:	1/12/2004 to 31/05/2008 (42 months)
Report Date:	11 September 2008
Title:	FINAL PLAN FOR USING AND DISSEMINATING THE KNOWLEDGE
Editor:	Ramiro Neves (IST)
Contributors:	Marcos Mateus (IST) and José Chambel (HIDROMOD)
Dissemination level:	Public
Number of pages:	13

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1 Section 1 - Exploitable knowledge and its Use

Overview table

Exploitable Knowledge (description)	Exploitable product(s) or measure(s)	Sector(s) of application	Timetable for commercial use	Owner & Other Partner(s) involved
Model applications	Modeling tools for each system	1.Policy makers 2.Academia 3.Local actors	---	IST, HIDROMOD, UNISANTA, IADO, UCHILE
Project Deliverables	Knowledge on the systems	1.Policy makers 2.Academia 3.Local actors	---	Consortium
Book 1	Knowledge on the systems	1.Policy makers 2.Academia 3.Local actors	---	IST
Book 2	Knowledge on the systems in Chile	1.Policy makers 2.Academia 3.Local actors 4.General public	---	UCHILE
SDSS	Software system	1.Policy makers 2.Academia 3.Local actors	---	UNITS, UNISANTA, USP
Meta-database	Web-based data search and retrieving system	1.Policy makers 2.Academia 3.Local actors	---	IST, HIDROMOD
Web site	Repository of the work	General public	---	IST

Model applications

The effort developed during the project to implement numerical models to each site aimed at providing local partners with tools to help the decision making process for the management of the sites. The validate model applications can be use to assess the impact and outcome of a number of development scenarios and management options. The implementation of the models to each site is undoubtedly a major innovation brought by the project.

Numerical models were one of the major research and management tools used during the project: Model applications and results are available for local actors to use, with local partners acting as products facilitators and consultants. This link between local partners and actors enables the dissemination of the products and may lead to future cooperation. Further research and development work can be made, improving the range of problems that the model can address or to simulate different scenarios for each site.

Other modeling tools are available for similar purposes. However, the MOHID used during the project has the advantage of being fully available for download at no cost. Also, local partners have been trained to use this software during the project and have the possibility to modify or upgrade it for better answering to new questions.

This tool can be exploited by local partners (UNISANTA, USP, IADO, UCHILE) together with local entities, with the collaboration of IST, HIDROMOD and NOCTILUCA for any background assistance. Model applications can be used by local partners to generate services for local actors and policy makers (decision-maker entities). Since this type of product can have a direct impact on decisions regarding the development and management of the systems, the exploitation of their results are expected to have impacts on the socio-economy of the areas.

Project deliverables

Project deliverables make a considerable pool of knowledge and experience for the end user of the project. They cover a wide range of scientific fields and address many site-specific issues, ranging from data sets, model applications, descriptions of the site compartments and links between them (ecological, physical and socio-economic) and results from the research developed during the project. They can act as tools to understand and integrate the major components of each system, thus helping in the decision making process. These reports are a major product from the project and aims at a large audience. Public deliverables are available for download at the project website.

The results from the Deliverables can be used as support for decisions regarding the socioeconomic development of the areas and the outcome of different management policies. They can also be used as a basis for future research in each system in areas such as hydrodynamics, groundwater, ecology, coastal management, etc.

Books

R Neves, J Baretta & M Mateus (eds.), 2008, **Perspectives on Integrated Coastal Zone Management in South America**, IST Press, Lisbon, Portugal, 600p. (ISBN: 978-972-8469-74-0)

Targeting the academic community and local actors, the Consortium has decided to publish the project's main achievement in the form of a book, providing an adequate support for the dissemination of the work developed during the project's timeframe.

Integrated coastal management is presented in the book as a broad, multi-purpose endeavor aimed at improving the quality of life of communities dependent on estuarine resources and helping local decision maker attaining sustainable development of estuarine areas, from the headwaters of coastal watersheds to the outer marine areas. The work presented in this volume is a step in that direction. Hopefully, the knowledge, experience, tools and results presented in the book will be used in other places with similar conflicting uses of natural resources.

The work developed during the project formed the knowledge pool for this book. The volume is a collection of writings selected on the basis of novelty, relevance in a water resource management framework, and insightfulness. Contributions have also been included in order to survey the strengths and limitations of a range of existing coastal zone management practices operating in different local environmental and socio-economic contexts. The core message that is highlighted is that the management challenges posed are complex and multifaceted, encompassing physical forcing, natural hazard and variability and vulnerability, together with socio-cultural vulnerability problems.

Being the result of a multidisciplinary scientific endeavor, the book will have an audience that range across a wide spectrum of environmental and social disciplines. The book should be of interest for anyone working in the field of ICZM (Integrated Coastal Zone Management), from scientists to decision makers. Dealing with examples from South America, the book has a strong local interest. However, the kind of approach developed in the project and portrayed in the book enables this work to be used as a benchmark for scientists working worldwide in related areas or facing the same challenges.

The book addresses costal zone management in an integrative way, with particular focus on water resources. As such, we hope it will be of interest for scientists working in fields such as aquatic ecology,

ecohydrology, ground water, marine sciences in general, water quality, coastal zone management, etc. In addition, the strong component of the modelling approach will target the modelling community, from ecosystem to ground water modelers.

P. Bachmann, L. Delgado y V. Marín (eds.), 2007, **Hacia un manejo ecológico integrado de zonas costeras en Chile**: Contribuciones del proyecto ECOManage, *Toward the integrated ecological management of coastal zones in Chile: Contributions of the ECOManage project*, 93pp., ISBN: 978-956-19-0570-2

Another printed book (93 pp) was published by the Partner of Universidad del Chile. This book is available, as a pdf file, at:

http://ecosistemas.uchile.cl/ecomanage/documentos/ebooks/libro01/ecomanage_uchile.pdf

This book was aimed at the local public. It is bilingual (Spanish and English) and contains the major achievements of the project in Chile at the middle of the 3rd period of the project.

It is expected that the local dissemination of the concept of the Physical-Ecological-Social system or (PHES-system) facilitates several of the requirements of the ICZM such as: the inclusion of human societies as components of coastal zones, the integrated analysis of eco-social components and the use of conceptual models as the basis of narration of the distinct visions held by the social actors that participate in management.

SDSS

UNITS is active since the last years in the field of Decision Support Systems / Spatial DSS and generally to decision support tools applied to environmental management, as proved to the participation to several projects in this field (JEDIS, ISOTEIA, STRIM). The results achieved in ECOMANAGE are expected to enhance this capability.

The activities of ECOMANAGE (especially the SDSS on ICZM of Santos Bay) will have positive follow-up in ameliorating the analysis of the Grado-Marano Lagoon in the further phases. In fact, it is planned to get in closer contact with the local stakeholders through a number of meetings and workshops for knowledge transfer, improving the technical skills and potential of decision-makers, and possibly collaborate to improve future territorial plans (e.g. the 5-year rural development plan).

UNITS has also the potential to extend its range of collaboration within Europe implying DSS / SDSS application in interregional and trans-border programs concerning ICZM in Adriatic (e.g. Interreg IPA Adriatic) and Mediterranean (e.g. Program MED), about which many links with local and international institutions are active. The expertise improved through ECOMANAGE will be certainly valuable for these purposes and for the application of new project proposals.

Meta-database

The data collected during the project is available through internet on a Meta Database (MetaDB). This was intended to collect the data and, simultaneously, classify and disseminate it both inside and outside project partners. This will be available after the end of the project for continued dissemination.

The address of the MetaDB is: <http://www.ecomanage.info/metadatabase/Default.aspx/>

The Common Data Index (CDI) is a development, initiated by Sea-Search, a EU VIFP project (<http://www.sea-search.net/>) which was adapted to fulfill ECOMANAGE's data management needs within

the MetaDB. For purposes of standardization and international exchange it was decided to adopt the ISO19115 metadata standard. Therefore the CDI metadata format has been translated into a CDI XML format, because this supports the interoperability with other systems and networks. The ISO19115 schema provides the basis and is used as reference model.

Its purpose was to enable users to get highly detailed insight in the availability and geographical spreading of data across the different ECOMANAGE partners and other data providers for the ECOMANAGE project. It covers all types of environmental datasets available under ECOMANAGE. The CDI thus provides an index (metadatabase) to individual datasets. These data sets can be physically located at partner databases and the CDI will provide a data link to them. Part of the data was made available at the ftp site of the project.

The MetaDB is to give answers to the following basic questions:

- Where?
- When?
- What?
- How?
- Who?
- Where to find data?
- Other relevant information?

Although not every data that can be made available, due to intellectual property rights or other access limitations, an email contact of the owner is provided for data requests.

The deployment of the MetaDB was made by IST with some help from Hidromod. The classification of the data was made by IST and Hidromod. All the partners were involved in the use of the MetaDB.

A detailed description of the MetaDB can be found in D1.11 & D4.7.

Web site

The ECOMANAGE public website is one of the main channels of communication and dissemination. Currently the <http://www.ecomanage.info/> site provides a combination of contents with different levels of information for different user's needs. It contains general information about the project and enables users to download the products of the project (books, book chapters, deliverables, thesis, etc.).

During the project the web site was mostly used has a visit card for the project and a way of reporting the progress to the general public. News, documents, general and detailed information were provide on a regular basis. With the end of the project, the web site will be mostly a place to share some of the final products with end users. Deliverables with public Access clearance are posted on the site and an integral version of the book will be fully available for download at the project's web site. A comprehensive list of other publications (book chapters, papers and thesis) are also available for download at the website. The site will be maintained for the period set by the Commission.

Site-specific sites were also developed, considering the significant reputation gained by the ECOMANAGE within local society. This will also be a good tool to transfer the obtained knowledge to stakeholders and general public. The local web pages for the project are:

- Argentina: <http://iado.criba.edu.ar/web/Ecomanage/index.htm>
- Brazil: www.unisanta.br/ecomanage
- Chile: <http://ecosistemas.uchile.cl/ecomanage/>

2 Section 2 – Dissemination of knowledge

The Consortium has identified five groups of target audiences that would potentially benefit from knowing the outcomes of the project:

- **Standard Bodies and Organisms** that have in charge the definition of policies and decision-making in the coastal management field at each study site
- **Consortium Organisations**, which will benefit from the projects products and possibly continue the work started during the project's period
- **Technical and Scientific Audience**, such as scientists and engineers involved in the management of coastal areas, participants in related EU projects, integrate coastal management research community, etc.
- **Target Customers**; such as Companies that may be interested in the use of the technology implemented and developed during the project, as well as in partnership with local project partners.
- **General Public** interested in site-specific coastal management or in broad terms.

This section provides a publishable summary of the activities developed by the consortium over the project.

Overview table

Planned /actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
Jan 2005	Project web site launch	General public			IST
14-17 Feb 2005	Kickoff meeting	Local and national authorities and media	Brazil	+100	UNISANTA
22 Jun 2005	Conference	Local and National authorities	Chile	40	UCHILE
23 Jun 2005	Conference / modelling course	Local actors, scientific staff	Chile	15	CEA, UCHILE, IST
24 Sep 2005	Press release	General public	Portugal		IST, HIDROMOD
26-28 Sep 2005	Conference / modelling course	Research	Portugal	15	IST
28 Sep 2005	Conference	Scientific Community	Spain	+200	IST, USP
15 Dec 2005	Meeting	Stakeholders, local authorities	Brazil	25	UNISANTA
18 Jan 2006	Meeting	Local Authorities	Brazil	20	UNISANTA
20-24 Mar 2006	Public conference	Local and National authorities; General public	Argentina	+30	IADO
2 Apr 2006	Meeting	Local authorities	Brazil		UNISANTA
10 Apr 2006	Conference	Research	Brazil		UNISANTA
13 Apr 2006	Conference / media brief	General public	Brazil		UNISANTA
23 May 2006	News release	General public	Brazil		UNISANTA
29 Jun 2006	Meeting	Local authorities	Brazil		UNISANTA
3 Jul 2006	Conference	Research	Brazil		USP
12 Aug 2006	Conference	General public	Brazil		UNISANTA
6-9 Sep 2006	Conference	Research	Chile		UNITS
4 Oct 2006	Conference	Research	Brazil		UNISANTA
Nov 2006	Workshop	Research	Italy		UNITS
6 Nov 2006	Publication	General public	Brazil		UNISANTA
22 Nov 2006	Publication	General public	Brazil		UNISANTA

Planned /actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
Jun 2007	Project's Metadata web release	Research, stakeholders			IST
13-15 May 2008	Project's closing meeting	General public	Brazil	+200	UNISANTA, USP / Consortium
8-12 September 2008	Modelling course	Post graduation students/researchers	Brazil	22	IOUSP
Nov 2008	Book releasing	Research; Local Authorities; Stakeholders			Consortium
Jun 2009	Special issue of the Brazilian Journal of Oceanography	Research	Brazil, Argentina, Chile		USP / UNISANTA, IST, UCHILE, IADO

Communication with the public

All the events promoted by ECOMANAGE consortium received considerable local and national media coverage. Specific communication channels addressed to the academia and socio-economic circles was also used by partners.

Conferences

The project ECOMANAGE was presented to the PASARELAS (“Discovery Mediation Deliberation”: Interface Tools for Multi-stakeholders Knowledge Partnership for the sustainable management of marine resources and coastal zones) meeting”, a project funded by European Commission. Third PASARELAS Symposium took place in Concepción (Chile) on 6th-9th of September 2006. Prof Feoli did a talk on “Integrated Coastal Management: geographic information as decision support tool. The case of Grado and Marano lagoon (N-E Italy) and Santos bay (Brazil)”.

Publications

During these steps several scientific publications has been done, not only in the book prepared as final report of the project but also in international journals (see list of publications in Section 3). With this framework, different research groups from IADO are working to finish with other publications, at present in phases of edition or preparation, as well as to develop new applications and uses of this tool in different of the involved areas (i.e., hydrodynamics, sediment transport, water quality, and ecology of the estuary).

Forthcoming events

The main events are planned to occur after the ending date of the project:

- The release of the Book that will take place in October 2008
- Publication of a special issue of the Brazilian Journal of Oceanography in mid-2009.
- Publication of several papers discussing results that have not been fully explored in the book.

3 Section 3 - Publishable results

Books

- Neves R, Baretta J and Mateus M (eds), 2008, Perspectives on Integrated Coastal Zone Management in South America, IST Press, Lisbon, Portugal.
- Bachmann P, Delgado L and Marín V, 2007, Toward the integrated ecological management of coastal zones in Chile: Contributions of the ECOMANAGE project, Salesianos Impresores S.A., Santiago, Chile, 93 pp.

Book chapters

- Marín VH and Delgado, 2005, The ecosystem management of living marine resources: an eco-social challenge, pp. 555-570, In: E. Figueroa (editor) Biodiversidad marina: valoración, usos y perspectivas, Editorial Universitaria, Chile.

Papers

- Yarrow MM, Tironi A, Ramírez AA, Marín VH, 2008, An applied assessment model to evaluate the socioeconomic impact of water quality regulations in Chile. Water Resources Management DOI 10.1007/s11269-008-9241-0
- Yarrow MM, Marín VH, 2007, Toward conceptual cohesiveness: a historical analysis of the theory and utility of ecological boundaries and transition zones. *Ecosystems* 10:462-476
- Marín VH, Delgado LE, Bachmann P, 2007, Conceptual PHES-system models of the Aysén watershed and fjord (Southern Chile): Testing a brainstorming strategy. *Journal of Environmental Management*. doi:10.1016/j.jenvman.2007.05.012
- Bachmann PL, Delgado LE, Marín VH, 2007, Analysis of the citizen's participation concept used by local decision makers: the case of the Aysén watershed in southern Chile. *Int. J. Sustainable development* 10: 251-266
- Marcovecchio, J.E. y L.D.Ferrer, 2005. Distribution and geochemical partitioning of heavy metals in sediments of the Bahía Blanca estuary, Argentina. *Journal of Coastal Research*, 21: 826-834.
- Grecco, L.E., A.O.Marcos, E.A.Gómez, S.Botté y J.Marcovecchio, 2006. Natural and anthropogenic input of heavy metals in sediments from the Bahía Blanca Estuary (Argentina). *Journal of Coastal Research* SI 39: 1021-1025.
- Popovich, C.A., C.V.Spetter, J.E.Marcovecchio y R.H.Freije, 2008. Dissolved nutrients availability during winter diatom bloom in a turbid and shallow estuary (Bahía Blanca, Argentina). *Journal of Coastal Research* 24: 95-102.
- Popovich, C.A. y J.E.Marcovecchio, 2008. Spatial Variability of Phytoplankton and Environmental Factors in a Temperate Estuary of South América (Atlantic Coast, Argentina). *Continental Shelf Research* 28: 236-244.
- Delgado LE, Bachmann PL & Oñate B, 2007, Gobernanza ambiental: una estrategia orientada al desarrollo sustentable local a través de la participación ciudadana. *Revista Ambiente y Desarrollo* 23 (3):68-73
- Delgado LE & Marín VH, 2005, FES-sistema: un concepto para la incorporación de las sociedades humanas en el análisis medioambiental en Chile. *Revista Ambiente y Desarrollo* 21(3):18-2

Master Thesis

Belchior CC, 2008, Gestão costeira integrada - Estudo de caso do projecto ECOMANAGE na região estuarina de Santos - São Vicente, SP, Brasil, Universidade de S. Paulo PROCAM, 108p.

Undergraduate Thesis

Ribeiro RB, 2007, Modelo conceitual do fluxo de energia no sistema estuarino de Santos - São Vicente com ênfase em três produtores primários, Universidade de Santa Cecília - Faculdade de Ciências e Tecnologia, 72p.

Fiori EF, 2007, Caracterização da macrofauna bentônica de substrato inconsolidado do estuário de Santos, SP, Universidade Santa Cecília - Faculdade de Ciências e Tecnologia, 64p.

Santos MP, 2007, Distribuição, densidade, biomassa e produção primária de spartina spp no sistema estuarino de Santos, SP, Brasil, Universidade Santa Cecília - Faculdade de Ciências e Tecnologia, 49p.

Moya GC & Kasamatsu LK, 2006, Análise sazonal dos organismos do "fouling" no estuário de Santos-São Vicente, SP, Universidade Santa Cecília - Faculdade de Ciências e Tecnologia, 52p.

Torres MA, 2007, Estudio de la estructura del paisaje a lo largo de gradientes urbano-rurales en la cuenca del Río Aysén (xi Región, Chile), Facultad de Ciencias Universidad de Chile, Santiago – Chile, 31p.

Altamirano TV, 2006, Modelación del flujo del nitrógeno, en la sub-cuenca mañihuales, Aysén, Facultad de Ciencias Universidad de Chile, Santiago – Chile, 46p.

Tironi A, 2006, Herramienta de gestión para la salmonicultura en bahía Chacabuco, Facultad de Ciencias Universidad de Chile, Santiago – Chile, 42p.

Oyarzo PA, 2006, Distribucion espacial de la carga de nutrientes en la cuenca hidrografica del Rio Aysén, Facultad de Ciencias Universidad de Chile, Santiago – Chile, 63p.