

DEVELOPING AN EAST ASIAN SEAS KNOWLEDGEBASE FOR COASTAL AND MARINE INFORMATION AND RESOURCES

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ABSTRACT

Currently, there are many institutions, projects and programmes dealing with coastal and marine management in the East Asian Seas Region, producing valuable outcomes at both national and regional levels. However, it is difficult to get a comprehensive overview of all the ongoing activities and it is not easy to access the large amounts of data produced in each country.

The Coordinating Body on the Seas of East Asia (COBSEA) consists of ten member countries bordering the East Asian Seas. COBSEA was formed in 1981 to oversee the implementation of the 'Action Plan for the Protection and Sustainable Development of the Marine and Coastal Areas of the East Asian Seas region'. UNEP East Asian Seas Regional Coordinating Unit (EAS/RCU) acts as the secretariat of COBSEA.

Information management and state of marine environment reporting are some of the main components of the Action Plan. The development of the East Asian Seas (EAS) Knowledgebase has been initiated to serve as a one-stop-shop for accessing data and information on coastal and marine environment in the region at both regional and national levels. The development of the EAS Knowledgebase has started with two main components:

- 1) Development of a regional database on existing programmes, projects and activities; and
- 2) Development of a pilot national database on national data and information regarding the coastal and marine environment.

The regional database is intended to facilitate the access to information on regional programmes and projects in a systematic manner. It will provide users with tools and resources that can assist COBSEA member countries in identifying potential overlaps and gaps while implementing new programmes and projects. The national databases are intended to collect national data and information on the state of the coastal and marine environment in order to increase the access to the scientific information required for policy recommendations and for identification and evaluation of emerging issues. In the long-term, the regional and national databases would be linked using best available Internet technologies, allowing users to visualize and access data and information over the Internet in a secure manner.

The paper will focus on the efforts in developing an EAS Knowledgebase that would offer a platform to share information in the form of directories, resources by themes,

metadata on coastal and marine related projects and activities, project reports and lessons learned.

For overall development of the EAS Knowledgebase, UNEP EAS/RCU has engaged the Tropical Marine Science Institute (TMSI) at the National University of Singapore. The pilot national database has been initiated through the Center of Environmental Monitoring, Data and Information (CEMDI), Vietnam Environmental Protection Agency.

1. Background

The Coordinating Body on the Seas of East Asia (COBSEA) consists of ten member countries bordering the East Asian Seas. The ten member countries include Australia, Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, Philippines, Singapore, Thailand and Vietnam. COBSEA was formed in 1981 to oversee the implementation of the 'Action Plan for the Protection and Sustainable Development of the Marine and Coastal Areas of the East Asian Seas region' (EAS Action Plan). COBSEA is a Regional Seas Programme administered by UNEP. UNEP East Asian Seas Regional Coordinating Unit (EAS/RCU) acts as the secretariat of COBSEA.

The key challenges that prompted the formation of COBSEA were a continuing degradation of marine environments and the political need for a coordinating body in the East Asian Seas region. When it was established, it was one of the first regional entities for the management of the marine and coastal environment in the East Asian Seas. (Kirkman et al., 2006)

The EAS Action Plan provides a comprehensive strategy to protect the marine and coastal environment of the East Asian Seas region and to promote its sustainable development. It takes into consideration the environmental and socioeconomic challenges faced by the countries and encompasses "steps urgently needed to formulate and establish a scientific programme involving research, prevention and control of marine pollution and monitoring." (UNEP, 1994)

An important component of the EAS Action Plan includes the identification of scientific activities to support the improved management of the coastal and marine environment in the region. The development of a regional database was identified as

instrumental in order to provide regularly updated information to policy/decision makers, managers and other scientists. In the EAS Action Plan, the proposed contents of a regional database included baseline information of major marine ecosystems in different countries; information on levels and trends of land-based and off-shore sources of pollution, directories of scientific institutions, research centers, information centers and data sources in the region; and bibliographies of publications on relevant marine environmental issues in the region. (UNEP, 1994)

At the Eighteenth Meeting of COBSEA, 24-25 January 2006, in Sanya, P.R. China, the member countries decided to further increase COBSEA's focus on information management and capacity building. (UNEP, 2006a)

During the COBSEA Regional Workshop on Coral Reef Monitoring and Management, 24-25 May, Pattaya, Thailand, the development of an EAS Knowledgebase was suggested. The outcomes from the workshop also proposed a facilitation framework to enable the knowledgebase to serve as a one-stop-shop for coral reef-related information. In addition, it was agreed that COBSEA would coordinate information gathering with the UNEP/GEF South China Sea Project to provide input also to the South China Sea Metadatabase and GIS database. (UNEP, 2006b)

Currently, there are many institutions, projects and programmes dealing with coastal and marine management in the East Asian Seas Region. These include national governments, agencies and organizations; international development partners such as UN agencies, donors, intergovernmental bodies, international NGOs and research institutions; communities and civil society, including universities and colleges; and the private sector. Valuable project outcomes and lessons learned are produced under these initiatives at both regional and national levels. Activities to address the sustainable management of coastal and marine resources include a wide range of areas such as the

development of regional and national cross-cutting policies and strategies, issue-specific scientific research, monitoring and assessment and community based projects to introduce sustainable livelihood options etc.

Many of these initiatives also include information management components. An overview of online coastal and marine environment related databases, meta-databases and information systems has been prepared by Richard T. Cooper, Birgitta Liss and Srisuda Jarayabhand. The overview is presented in Hugh Kirkman's paper 'Databases in the East Asian Seas Region and the Need for Enhanced National and Regional Access'. The overview shows a wide range of global databases including data and information on the extent and status of marine and coastal resources and GIS maps on geology, elevation, demography etc. However, at present it is very difficult to get a comprehensive picture of the ongoing project and programme activities in the East Asian Seas region. It is also difficult to access the large amounts of data and information produced in each country.

2. Development of the EAS Knowledgebase

This paper is focusing on the efforts by UNEP EAS/RCU, along with the Tropical Marine Science Institute (TMSI) at the National University of Singapore, in developing an East Asian Seas (EAS) Knowledgebase. The EAS Knowledgebase would offer a platform to share information in the form of directories, resources by themes, metadata on coastal and marine related projects and activities, project reports and lessons learned. The EAS Knowledgebase will be launched and online in the beginning of 2007. The development of a pilot national database has been initiated in Vietnam through the Center of Environmental Monitoring, Data and Information (CEMDI), Vietnam Environmental Protection Agency. The pilot national database is intended to constitute a

national node to the EAS Knowledgebase. The paper written by Mr. Hoang Duong Tung and entitled 'Vietnam's National Database on the State of Marine Environment' describes the pilot national database development.

The development of an EAS Knowledgebase is meant to strengthen information sharing between governments and regional organizations. The EAS Knowledgebase is intended to compile information from activities in the East Asian Seas region to provide an overview of coastal and marine initiatives and to present the valuable lessons learned from these activities. COBSEA would serve as the intermediary, receiving inputs from national and regional sources and compiling it into specific outputs such as synthesized information and guidebooks on relevant themes and topics.

The development of the EAS Knowledgebase has started with two main components:

- 1) Development of a regional activities knowledgebase including resources, programmes and projects in the East Asian Seas region; and
- 2) Development of a pilot national database including national and local-level coastal and marine environment data and information.

2.1 Regional Activities Knowledgebase Development

The contents and structure of the regional activities knowledgebase were identified in order to provide an overview of coastal and marine environment related activities, valuable outcomes and lessons learned in the East Asian Seas region. See Figure 1.

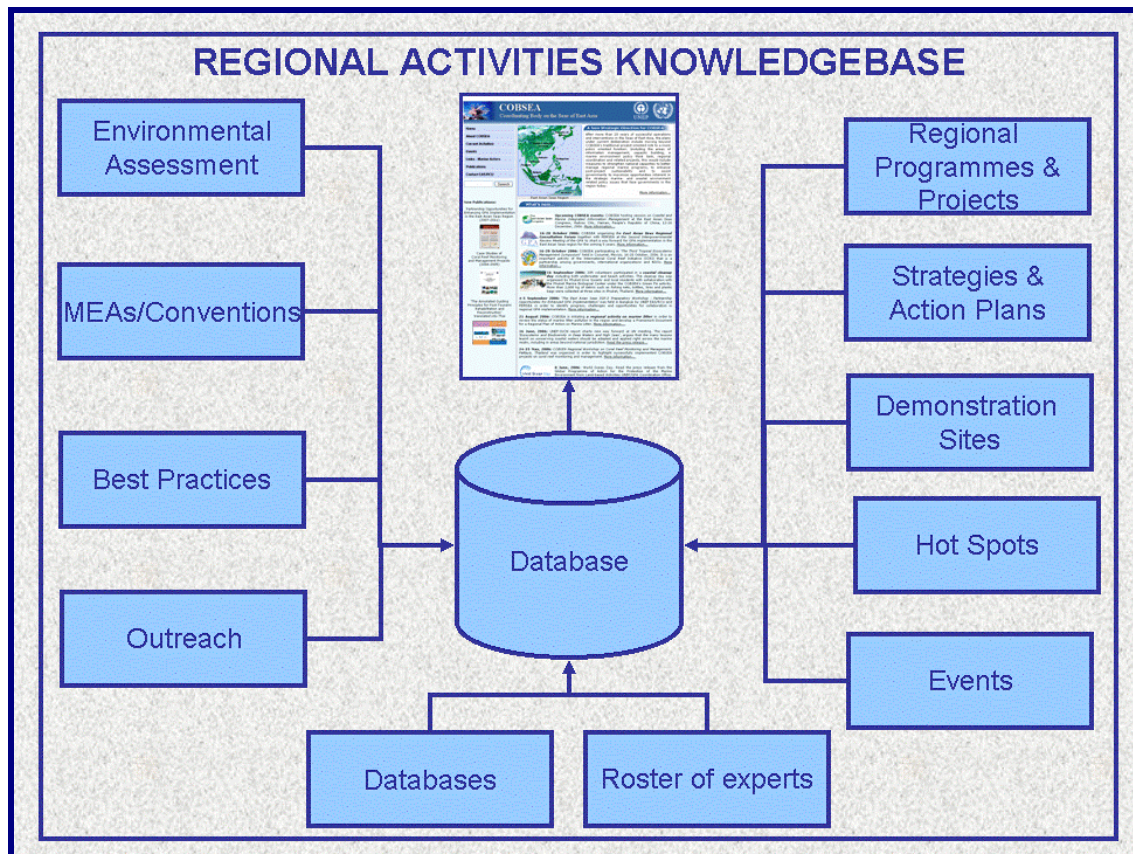


Fig. 1 Information content flow in the Regional Activities Knowledgebase

The collection of information for the regional activities knowledgebase was based on a generic template including the following topics (see also Figure 1):

A. Resources

- Environmental Assessment: Library of downloadable reports on general and issue-specific environmental assessments.
- MEAs / Conventions: Status of implementation among COBSEA member countries.
- Best Practices: Library of downloadable documents, reports and guidelines related to the sustainable management of coastal and marine resources.
- Outreach: Downloadable public awareness material promoting coastal environmental protection.

- Databases: Categorization of and links to existing databases related to the coastal and marine environment.
- Roster of experts: Details of experts on coastal- and marine environment related topics.

B. Regional activities:

- Regional programmes and projects: Information and description of relevant intergovernmental bodies, organizations, programmes and projects in the East Asian Seas region.
- Strategies and action plans: Information and description of relevant strategies and action plans developed under the regional programmes and projects.
- Demonstration sites: Description of demonstration sites and site activities initiated under regional programmes and projects.
- Hotspots: Description and categorization of coastal and environmental hotspots identified at national and regional levels.
- Events: Calendar of trainings, workshops, meetings and forums in the East Asian Seas region.

The contents of the regional activities knowledgebase were collected using a template which includes identification and collection of data/information from public sources such as web sites, published reports, guidebooks etc. A detailed internet search was carried out using keywords from the template. In addition, reports and websites of government agencies, programmes and projects in the COBSEA member countries were consulted.

The collected information was then organized using Microsoft Excel based on the template topics and sorted based on different data types such as text, documents, maps, metadata, links to existing databases, references to websites etc.

The Regional Activities Knowledgebase was developed using open source tools such as: Web server: Tomcat, Database: MySQL, Application development: PHP and HTML. The system development involves a comprehensive database design following open data standards taking into consideration storage and interoperability with other global, regional and national information systems for future association. The compiled information was imported to MySQL database as individual tables. In order to relate the individual tables a common item was included in all the tables named theme as the primary key. Further the theme keywords were identified for each topics based on the contents such as coastal resources, coral reefs, mangroves, pollution, cross cutting etc.

Applications were built using HTML and PHP to interface with the database and to develop user friendly and interactive web based portal where users can navigate through different hyperlinks to visualize the information on regional resources and activities (Figure 2). Users can also search for information based on theme keywords or click on a regional map to retrieve the appropriate information in the region.

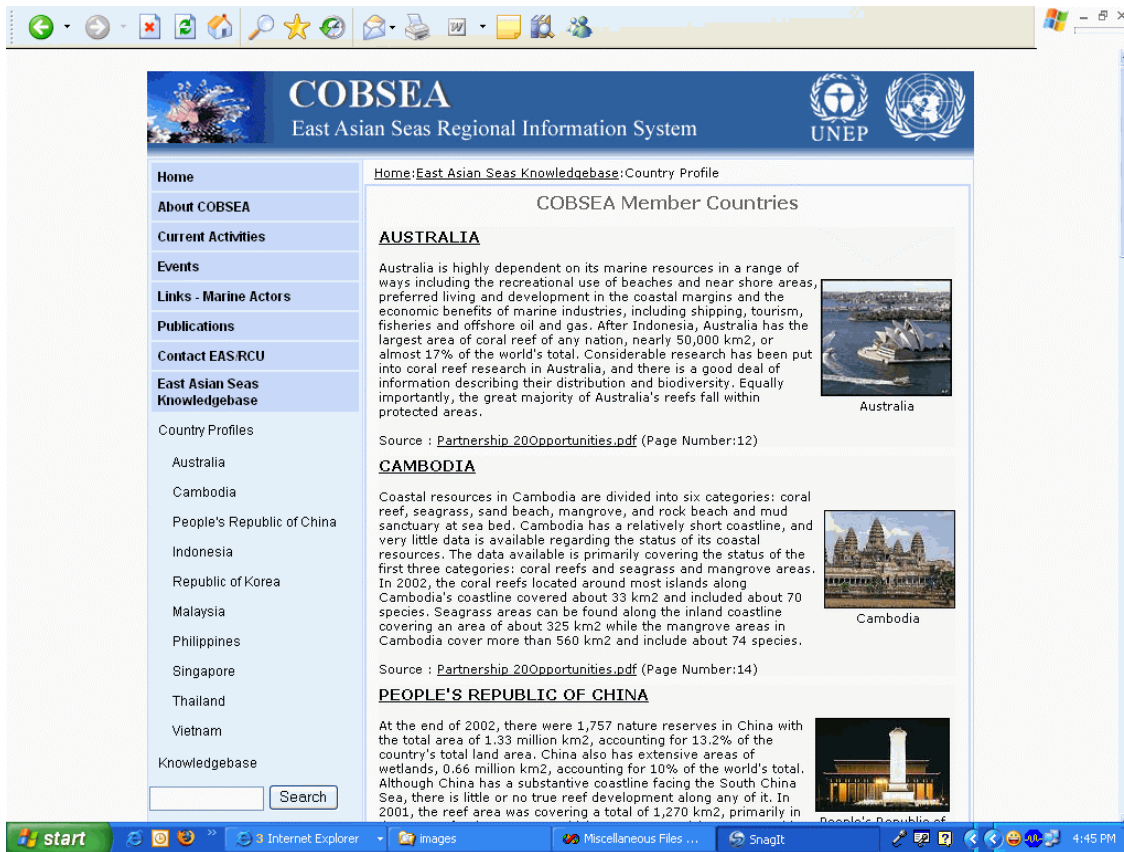


Fig. 2 COBSEA interactive web portal

2.2 Pilot national database development

The development of the EAS Knowledgebase also includes the development of a pilot national database. The pilot national database is intended to constitute a national node to the EAS Knowledgebase while providing a one-stop-shop for coastal and marine data and information at national level and a database for strengthened state of marine environment reporting.

The pilot national database development is being undertaken by the Center for Environmental Monitoring, Data and Information (CEMDI), Ministry of Natural Resources and Environment in Vietnam. UNEP EAS/RCU and TMSI developed a database template to demonstrate the proposed contents of the pilot national database. The

database template has later been modified by CEMDI during the pilot national database development. CEMDI, that is also co-financing the national database development, has taken the full responsibility of data collection, organization of the data/information and database development.

When finalized, the pilot national database will be demonstrated to all COBSEA member countries. Thanks to the financial support made available by the Swedish International Development Agency (Sida), UNEP EAS/RCU will be able to expand the national nodes to the EAS Knowledgebase to an additional two COBSEA member countries during 2007. Expansion of the national nodes could include the provision of financial and technical support for updating and translating an existing national database on coastal and marine environment or initiate the development of such a database in the countries where it does not exist.

2.3 Structure of the EAS Knowledgebase

The EAS Knowledgebase is envisioned to consist of a regional activities knowledgebase that is linked to national coordination centers. The national coordination centers will be following the concept as demonstrated by the pilot national database in Vietnam. Financial and technical support is available for COBSEA member countries for the development of such centers. (See Figure. 3)

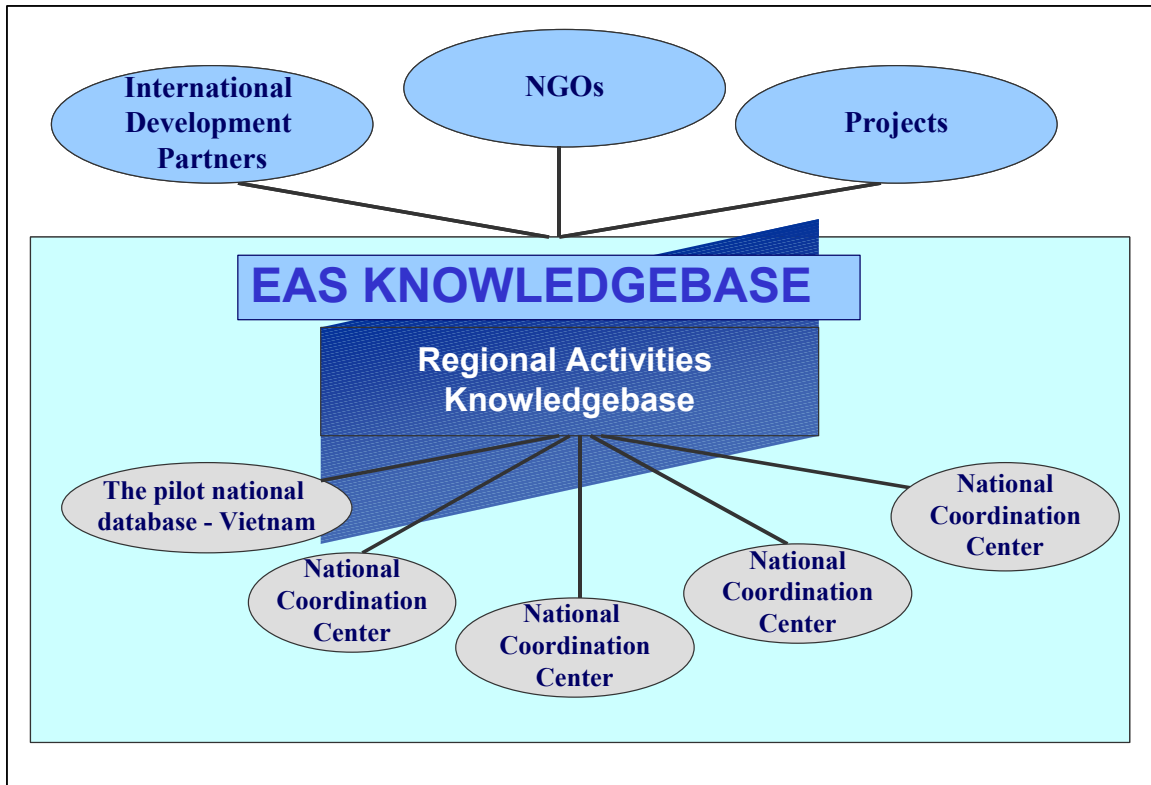


Fig. 3 Structure of the EAS Knowledgebase

3. Conclusion

The EAS Knowledgebase is a growing database, which is still under development. It will be constantly updated and expanded to better serve the member countries, programmes, projects and donors that are actively involved in the management of the coastal and marine environment in the East Asian Seas region.

Providing up-to-date information on project and programme activities in the East Asian Seas region is an ambitious task. COBSEA is a permanent intergovernmental body with the mandate from its member countries to focus on information management. Long-term sustainability of any database is often a challenge and external funding is required also during the development of the EAS Knowledgebase. However, the permanent nature of COBSEA and its secretariat ensures that the long-term

maintenance of the knowledgebase will be less dependent on time-limited project funding.

Through collaboration with countries and regional partners, the development of the EAS Knowledgebase is intended to enhance information exchange on coastal and marine environment related activities and lessons learned between the governments and organizations in the region. Through the development and expansion of national nodes it will also be able to provide national data and information on the state of coastal and marine resources and national activities. Furthermore, the outcomes from the EAS Knowledgebase can be used for strengthened state of marine environment reporting and periodical reports synthesizing regional activities and analyzing lessons-learned.

During the first phase of the EAS Knowledgebase development, the information has been collected from publicly available sources. While continuing the development and expansion of the EAS Knowledgebase, an effective collaborative arrangement between COBSEA, partner organizations and national governments would further strengthen and facilitate information collection. For this reason, further exploration of means for regional networking and collaboration is required. The organization of the Seminar on Integrated Coastal and Marine Information Management provides an opportunity to highlight how existing projects and programmes can work together to increase the access to information in the region.

4. References

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