Establishment of a Regional GIS Data Base for PERSGA
**Project Activities**

1. **Forming Regional GIS Technical Specialist Team**

2. **Regional GIS needs assessment at PERSGA HQ and member countries**

3. **Develop PERSGA regional GIS database**

4. **Developing of PERSGA GIS web Site**

5. **Modelling, remote sensing and other GIS Applications**

6. **Lessons learned, Recommendations,& Reports**
1. To establish a regional team of GIS specialists, which will be composed of one GIS specialist from each PERSGA member country. A TOR for the regional GIS Team will be drafted and approved by PERSGA. PERSGA Focal Points, environmental agencies in the member countries, SAP National Programme Co-ordinators and UNDP country offices will be invited to assist in the identification of candidates. CVs of potential Technical Team members will be screened and suitable candidates suggested to the PERSGA Focal Points for final selection and approval. The GIS Technical Team members will receive advanced GIS training.
1. To conduct a regional assessment of GIS capacities and needs in co-ordination with the regional GIS Technical Team members. CEDARE consultants will visit PERSGA HQs and member countries to assess the present use of GIS in coastal and marine environmental management, the need for further capacity building, and requirements to harmonise GIS systems presently in use.
استمارة استبيان

حوـل البنية الأساسية لنظم المعلومات الجغرافية في مصلحة الأرصاد وحماية البيئة
<table>
<thead>
<tr>
<th>رقمية</th>
<th>ورقية</th>
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<tbody>
<tr>
<td>صور فضائية</td>
<td>صور جوية</td>
</tr>
<tr>
<td>مسح أرضي</td>
<td>ب- وسيلة الإنتاج:</td>
</tr>
</tbody>
</table>

| ج- النوع: | (طبوغرافية-جيولوجية-هيدرولوجية-تخصصية- أخرى) |

| 1 | ططبوغرافية (للملكة بشكل عام جدة عام 1:10,000 + 1:500,000) |

| 2- شبكة الطرق و المدن الرئيسية |
| 3- مواقع المواطنين البيئية على ساحل البحر الأحمر والخليج العربي |
| 4- المناطق الحساسة بيئة على ساحل البحر الأحمر والخليج العربي |
| 5- مواقع محطات الرصد الجوي و محطات قياس جودة الهواء |

تطبيقات في مجال نظام المعلومات الجغرافية:

- حماية البيئة
- الجيولوجيا
- إدارة المناطق الصحراوية
- الزراعة
- التصحر
- الموارد المائية
- التخطيط العمراني
- الصحة
- استخدامات الأراضي
- النفط و الغاز
- إدارة الثروات الطبيعية
- إدارة الأزمات وتقييم المخاطر
- النقل والموصلات
- التنمية الاقتصادية والاجتماعية و الديمографية
- إنتاج الخرائط الرقمية
- الأثر
- شبكات المرافق و الخدمات

Back to Needs Assessment Activities
To Develop a regional GIS database, including data assessment, data collection, verification (quality assessment), standardisation and data entry

More than 400 GIS data Layers were developed at country and regional level.

Admiralty Charts were entered the GIS database.

Available Data for PERSGA components were linked to the GIS.

User Friendly Interface for the whole project was customized.

Meta Data for all the Layers that were developed.

Data dictionary for the developed layers was created.
GIS Layers

- Regional (PERSGA Region)
- National (PERSGA countries)
- Coastal “Sensitive Areas”
- Remote Sensing Images

Back to Develop GIS
Types of Collected Data

• Analog Source Maps

• Digital Maps

• Remote Sensing Images
PERSGA Workstation
Types of Data

- Administrative Boundaries
- Topographic Maps
- Geologic Maps
- Soil Maps
- Land Degradation
- Hydrology
- Census and Demographic
- Socio-economic
- Transport network
- Vegetation
- Other Coastal and marine related maps
Currently Available Digital Layers

- Lithology
- Geological Structures
- Temperature
- Global Precipitation
- Potential Evapo Transpiration
- Climatic Changes, Humidity Index
• Wilderness Areas

• Land Cover Point Features

• Utilities Networks

• Elevation Contours Lines

• Elevation Points

• Marine Reefs

• Surface Water Networks
• Miscellaneous Hyd. Point Features
• Ground Water Aquifer
• Ground Water Direction
• Surface Water Bodies
• Water Shed Devide
• Ground Water Quality
• Cultural Land-Marks
- Transportation Point Features
- Political / Administrative Boundaries
- Urban Areas
- Population Settlements
- Cultural Land-Marks
- Aeronautical Features
- Transportation Networks (Railroads)
• Transportation Networks (Roads)

• Socioeconomic from WDB

• Desertification Hazard

• Land Deg Characteristics

• Soil Classification
PERSGA regional GIS database Indicators Available at Regional and National level

• Atmosphere and Climate
• Biodiversity
• Economic Indicators
• Energy and Materials
• Food and Agriculture
• Forests and Land Cover
• Freshwater
• Health
• Oceans and Fisheries
• Population and Human Development
• Urban Data
<table>
<thead>
<tr>
<th><strong>Coastal Resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastlines</td>
</tr>
<tr>
<td>Offshore to 200m</td>
</tr>
<tr>
<td>Area in EEZ</td>
</tr>
<tr>
<td>Coastal pop</td>
</tr>
<tr>
<td>Crude oil loaded</td>
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<tr>
<td>Crude oil unloaded</td>
</tr>
<tr>
<td>Petroleum prod. loaded</td>
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<tr>
<td>Petroleum prod. unload</td>
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<tr>
<td>Dry goods loaded</td>
</tr>
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<td>Dry goods unloaded</td>
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<tr>
<td>Offshore oil production</td>
</tr>
<tr>
<td>Offshore gas production</td>
</tr>
<tr>
<td>Offshore oil reserves</td>
</tr>
<tr>
<td>Offshore gas reserves</td>
</tr>
</tbody>
</table>
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**Chart Name:** A. Bur Said  
**Scale:** 1:12500  
**Projection:** Transverse Mercator  
**Depth Units:** Metres  
**Height Units:** Metres

**Information for the Base Chart**

- **Base Chart Number:** 234  
- **Base Chart Name:** Approaches to Bur Said  
- **Country of origin:** United Kingdom  
- **Issue date:** 12 04 2001  
- **Latest NM:** 2000 3988

---

**PERSGA DATA SETS**  
**Level:** Hot Spot  
**Port Said Harbor**
PERSGA DATA SETS
Level : Hot Spot
Bab Al Mandab

Chart Name : Red Sea
Scale : 1:2250000
Projection : Mercator
Depth Units : Metres
Height Units : Metres

Information for the Base Chart
Base Chart Number : 4704
Base Chart Name : Red Sea
Country of origin : United Kingdom
Issue date : 07 03 2002
Latest NM : 2002 80
El Aqaba Industrial Port
Djibouti
Port Sudan
Support for Integrated Coastal Zone Management:


Back to PERSGA components
Marine Protected Areas-MPAs:
Proposed Marine Protected Area for Sudan
"Dungonab Bay & Mukkawar (Magarsam) Island, Sudan"
Marine Protected Area Component

Yemen - Bir Ali - Belhaf
D-4  To develop a GIS Website for PERSGA

July 2001 Dec 2001 update till the end of the project

To develop a GIS Website for PERSGA, allowing access to the PERSGA GIS database and maps hosted on the dedicated server in CEDARE

CEDARE has set up PERSGA GIS web site:

The developed GIS data bases

GIS activities

GIS METADATA

Internet Map server (ArcIMS)
Developing of PERSGA GIS web Site
SELECT COUNTRY

DJIBOUTI  EGYPT
JORDAN   Saudi Arabia
SOMALIA  SUDAN
YEMEN

Regional
<table>
<thead>
<tr>
<th>Layer Theme</th>
<th>Map Feature</th>
<th>Layer Description</th>
<th>Source/Producer</th>
</tr>
</thead>
<tbody>
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<td>Polygon</td>
<td>It represents the populated places like urbanized areas (built-up areas) of the world that can be represented as polygons at the scale 1M.</td>
<td>ESRI</td>
</tr>
<tr>
<td>Populated Place</td>
<td>Point</td>
<td>It represents the urbanized areas (built-up areas) of the world that can be represented as polygons at the scale</td>
<td>ESRI</td>
</tr>
<tr>
<td>Railroads</td>
<td>Line</td>
<td>It represents the railroads network that can be represented as lines at the scale 1M</td>
<td>ESRI</td>
</tr>
<tr>
<td>Roads</td>
<td>Line</td>
<td>It represents the roads network that can be represented as lines at the scale 1M.</td>
<td>ESRI</td>
</tr>
<tr>
<td>Utilities</td>
<td>Line</td>
<td>It represents the utilities network that can be represented as lines at the scale 1M.</td>
<td>ESRI</td>
</tr>
</tbody>
</table>
Modelling, remote sensing and other GIS Applications

1- PERSGA GIS Based indicators

2- PERSGA Sustainable Development Indicators Information System (SDIS)

3- LMR Data base model

4- HBC Information System

5- CD ROM for Public Awareness

6- Remote Sensing Covering Red Sea
Sustainable Use and Management of Living Marine Resources
PERSGA
LMR Database & GIS System
1.0
Catch and Catch/Effort Calculations Models

Country: [Select] Egypt
Stat Year: 1003, Last Year: 1990

Schaefer Model:
- $k = 0.71$
- $n = -7.04$
- $r = -0.76$
- $V^* = 547,276$
- $FV^* = 112,640$

Fox Model:
- $A = -2.745$
- $h = 0.711$
- $r = -0.332$
- $M3V = 52.902$
- $FMSY = 31.142$

Fishing Status: Overfishing
To increase the total catch by 574.2 tons (54.8%) fishing EY must be reduced to 3.3 (35%)
FinFish Species in the Red Sea

Find Species Name

1

Species: Aulostomus maculatus
Family: Aulostomidae
Common Name (English):
Common Name (Arabic):
Common Name (French): Taref
Length (cm): 60

Add | Delete
First | Next | Previous | Last

Back
Habitat And Biodiversity Component
HBD Information System

- Birds Information System
- Turtle Information System
Birds Information System

Provide information about the existing species of Birds in the Red Sea and Gulf of Aden. The information systems assist in gathering data from the surveys conducted by specialist to monitor birds' species available at the Red sea and Gulf of Aden. The information system provides graphical and tabular reports, with the ability to link spatial systems to provide spatial reporting capabilities. The information system can assist in proposing protected areas to conserve locations of birds' species from development.
<table>
<thead>
<tr>
<th>Spec Code</th>
<th>Latin Name E</th>
<th>Latin Name F</th>
<th>Latin Name A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Red-billed Tropicbird</td>
<td>Phaetho</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sooty Gull</td>
<td>Larus hemprichii</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>White-eyed Gull</td>
<td>Larus leucophaeetus</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Caspian Gull</td>
<td>Larus fuscus caudatus</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Slender-billed Gull</td>
<td>Larus genei</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Eurasian Spoonbill</td>
<td>Platalea leucorodia</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Greater Flamingo</td>
<td>Phoenicopterus</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Cattle Egret</td>
<td>Bubulcus ibis</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Western Reef Heron</td>
<td>Egretta gularis</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Striated heron</td>
<td>Butorides striata</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Black-headed Heron</td>
<td>Ardea melanocephala</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Grey Heron</td>
<td>Ardea cinerea</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Brown Booby</td>
<td>Sula leucogaster</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Masked Booby</td>
<td>Sula dactylatra</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Goliath Heron</td>
<td>Ardea goliath</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Pink-backed Pelican</td>
<td>Pelecanus</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Sacred Ibis</td>
<td>Threskiornis aethiopicus</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Crab Plover</td>
<td>Dromas ardeola</td>
<td></td>
</tr>
</tbody>
</table>
Turtle Information System

• provide a user-friendly information system that can assist researcher and decision makers to search for information about marine turtles in the Red Sea and Gulf of Aden. The outputs of the system provide information about the locations of marine turtle's species and their type through which researcher and decision makers can provide selections for protected areas for marine turtles and can monitor their frequency of occurrence along the Red sea and Gulf of Aden.
Red Sea and Gulf of Aden Marine Turtles Information Systems

User Name: admin
Password: ****
Language: English

Ok | Cancel
1-GIS based Indicators

GIS Based indicators that contains data about the following:

- Coastal and Marine
- Atmosphere & Climate
- Biodiversity
- Economic Indicators
- Energy & Materials
- Food & Agriculture
- Forests & Rangelands
- Land Cover & Settlements
Select one file from the list for this data category.

- Coasts.shp
- Fish.shp
- Waste.shp
- Water.shp
- <file with user calculated variable>
### Coastal Resources

**filename: COASTS.SHP**

The fields listed below contain data on Coastal Resources by country for the years given. To see and source for a field, click on the underlined words.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastlines</td>
<td>Length of coastline (in kilometers) - most recent data available from the 1990s</td>
</tr>
<tr>
<td>Offshore to 200m</td>
<td>Maritime area – shelf to 200-meter depth (in thousands of square kilometers) recent data available from the 1990s</td>
</tr>
<tr>
<td>Area in EEZ</td>
<td>Maritime area in exclusive economic zone (in thousands of square kilometers) recent data available from the 1990s</td>
</tr>
<tr>
<td>Coastal pop</td>
<td>Population in coastal urban agglomerations (thousands) for: 2000, 1980</td>
</tr>
<tr>
<td>Crude oil loaded</td>
<td>Average annual volume of crude petroleum loaded (in thousands of metric tons)</td>
</tr>
<tr>
<td>Crude oil unloaded</td>
<td>Average annual volume of crude petroleum unloaded (in thousands of metric tons)</td>
</tr>
<tr>
<td>Petroleum prod. loaded</td>
<td>Average annual volume of petroleum products loaded (in thousands of metric tons) 1990</td>
</tr>
<tr>
<td>Petroleum prod. unload</td>
<td>Average annual volume of petroleum products unloaded, (in thousands of metric tons) 1990</td>
</tr>
<tr>
<td>Dry goods loaded</td>
<td>Average annual volume of dry cargo loaded (in thousands of metric tons)</td>
</tr>
<tr>
<td>Dry goods unloaded</td>
<td>Average annual volume of dry cargo unloaded (in thousands of metric tons)</td>
</tr>
<tr>
<td>Offshore oil production</td>
<td>Offshore oil production (in thousands of metric tons) in 1992</td>
</tr>
<tr>
<td>Offshore gas production</td>
<td>Offshore gas production (million cubic meters) in 1992</td>
</tr>
<tr>
<td>Offshore oil reserves</td>
<td>Proven offshore oil reserves (in million metric tons) in 1992</td>
</tr>
<tr>
<td>Offshore gas reserves</td>
<td>Proven offshore gas reserves (in billion cubic meters) in 1992</td>
</tr>
<tr>
<td>Population 1995</td>
<td>Total population in 1995</td>
</tr>
</tbody>
</table>
OUTPUTS: In form of Digital Maps
OUTPUTS: In form of Charts

Marine Fish Catch 1970-1993

- Jordan
- Saudi Arabia
- Egypt
- Sudan
- Yemen
- Djibouti
- Somalia
PERSGA GIS BASED INDICATORS

Fish catch 70
0 - 564995 metric tons
564996 - 1716875
1716876 - 4151913
4151914 - 9933822
No Data

Back to modelling Activities
National Digital Elevation Model for Yemen
DEM of Yemen

This is a Digital Elevation Model (DEM) of Yemen. The different colors represent the various elevation zones.

Data Source(s): DCW and Arcatlas
Soil map of Saudi Arabia

This map shows the soil technogenic contamination hazard of soils including (1) soil oxidation and resistance to acid threats, (2) pollution of soils by lead compounds, and (3) pollution of soils by selenium compounds in Saudi Arabia.

Data Source(s): DCW and Arcatlas
EGYPT-Administrative Boundaries
Water Map of Egypt

The water resources of Egypt are depicted in this map, including the main rivers, wells, reservoirs and lakes. The map also shows the ground water age.

Data Source(s): DCW and Arcatlas
Geology Map of Egypt

The color contrasts identify different geological units in Egypt based on rock type and magnetic properties. The map also shows the lithologic features like faults and folds.

Data Source(s): Research Institute of Ground Water, 1988.
Egypt Digital Elevation Model
Hydrogeology Map of Jordan

This map illustrates the Ground Water Balance Areas in East Jordan. It shows the salinity of the groundwater and the direction of groundwater flow. The original scale was 1:1 million.

Data Source(s): Natural Resources Authority, Amman. (Jordan)
Soil Map of Jordan

The above map includes a detailed soil specification for Jordan, ranging from alluvial fans, flat to gently undulating, mountainous regions, sloping areas etc... The name of the source map is the Generalized Schematic Soil Map with 1:1 million scale.

Data Source(s): Natural Resources Authority, Amman.
Back to Develop GIS
Red Sea and Gulf of Aden Sustainable Development Data and Indicators Information System
## Red Sea and Gulf of Aden Sustainable Development Data and Indicators Information System

<table>
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<tr>
<th>Serial No</th>
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<td>461</td>
<td>Agricultural Area</td>
<td>Thousand Hectares</td>
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<tr>
<td>462</td>
<td>Agricultural Production Index</td>
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**Year**: 2005

**Remarks**: 

**Metadata ID**: X

**Element Details En**: X

**TEXT En**: X
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<td>Contributer</td>
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**LookUp's**

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<td>درجة</td>
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<td>اللغة</td>
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<th>LookUp Name Fr</th>
<th>LookUp Name Ar</th>
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<td>Governmental Organization</td>
<td>Organisation Gouvernementale</td>
<td>هيئة حكومية</td>
</tr>
<tr>
<td>International Organization</td>
<td>Organisation Internationale</td>
<td>هيئة دولية</td>
</tr>
<tr>
<td>Non Governmental Organization</td>
<td>Organisation non Gouvernements</td>
<td>هيئة غير حكومية</td>
</tr>
</tbody>
</table>
Establishment of a Regional GIS Data Base for PERSGA

Sustainable Development Indicators Information System (SDIS)

January 2002

Back to modelling Activities
GIS based Indicators

GIS Based indicators that contains data about the following:

Coastal and Marine
Atmosphere & Climate
Biodiversity
Economic Indicators
Energy & Materials
Food & Agriculture
Forests & Rangelands
Land Cover & Settlements
Lessons learned and experiences

A review of all national and regional on-going projects and initiatives related to the project should have been conducted prior to the implementation which might have decreased the level of redundancy and improve regional co-operation.

• The activities to be carried out under this project required development of a work plan for Region-wide implementation. In furtherance of this goal, the SAP is maintained under revised terms of reference to allow it to oversee implementation and monitor the progress of the full programme.

• Lack of information and access to information is a continuing constraint for developing an environmental Information systems within PERSGA region, including insufficient baseline information data and analysis of available information.

• In many cases, data exists in one Institution, organization, entity or report but is not available to other entities or to the public. The lack of a tradition of information sharing is exacerbated by the technical difficulty of dissemination and access.
Recommendations of priorities for action:

**Policy:**

- There is a need for an information exchange mechanism which enables the exchange of information through servers, website and database, and periodic newsletter for the region.
- It is highly recommended to improve the understanding of international environment agreements, and of the linkages of national programmes with these conventions.
- Attention should be drawn to technical assistance for the establishment and implementation of national environmental information Strategies in many countries of the region as part of the assessment of environmental information management policies. Support to national Institutions regarding legislative and policy-making frameworks for data exchange should be provided.
Institutional

• Institutional capacity needs to be strengthened in the area of regulatory environmental policy and environmental oversight.
• Providing administrative services to the national experts as well as regional expert is highly recommended
• Developing additional regional protocols where needed for in the SAP.
• Strengthen the capacity of public and private sector to provide consistent and reliable data to enhance the environmental assessment processes.
• Provide countries with the state of the art hardware and software as well as training on the use of different information systems.
• There is a shortage of qualified environmental information staff in the region for planning and follow-up departments.
Technical

• There is a need for developing national environmental indicators. It should be noted that the lack of data for any environmental indicator will not automatically prevent its development of environmental information systems. However, the lack of agreed upon set of indicators can make the effort of developing information system much more difficult and costly in time and resources.

• It was crucial to continue preparing a regional environmental education and communication strategy as part of the thematic programme of PERSGA.

• Establishing an effective regional information exchange system and databases requires an initial understanding among all countries of the importance of such systems. The benefits of the outcomes of the system should be made clear to all countries from the very beginning of the programme.

• Regional initiatives, projects or studies that build upon and integrate existing national pilot or prototype activities are particularly desirable.