

Large-Marine Ecosystem Indicators of Global Change

Description

Objective – NOAA's Large Marine Ecosystem (LME) Program is linking GEO goals, objectives and products with international LME projects monitoring changing conditions in five key ocean ecosystem component-productivity, fish and fisheries, pollution and ecosystem health, socioeconomics, and governance.

Methods – Collaboration is underway with 110 developing countries in Africa, Asia, Latin America, and eastern Europe in partnership with the Global Environment Facility, the World Bank, Regional Development banks, five UN agencies and two NGO's for implementation of LME projects to reduce degradation of linked watersheds, marine resources and coastal environments from pollution, nutrient over-enrichment, habitat loss, over-fishing, and climate change.

Data – With NOAA's scientific and technical support this international collaboration is presently providing data and information from 16 LME projects on productivity, coastal oceanography, nutrients, climatology, fish and fisheries, pollution and ecosystem health. This data supports LME – wide management decisions made by the participating countries for recovering depleted fish stocks, restoring degraded habitats, reducing and controlling nutrient over-enrichment, adapting to climate change, and restoring and sustaining ecosystem goods and services.

Results/Impact – The LME projects are "country-driven" efforts to meet the World Summit on Sustainable Development (WSSD) targets for reducing coastal pollution, introducing an ecosystem-based approach to resource management by 2010, establishing a network of marine protected areas by 2012, and restoring depleted fish stocks to maximum sustainable levels by 2015. Movement toward these goals is underway by the 110 participating countries. The 16 LME projects are supported with \$1.8 billion in financial assistance from the GEF, World Bank, and other donors. In each of the projects, the participating countries have adopted a Strategic Action Plan, which is adjusted for the unique LME conditions and moves the countries toward the WSSD marine targets. Results are reported through established Program Coordinating Units, and are available globally through an existing LME electronic network.

Added Value

1. The LME approach supports large scale environmental monitoring of the world's coastal waters. The LME projects maintain large data banks, and metadata that support data networks, and allow for analyses and scenario testing, in support of management decisions for the restoration and sustainability of LME goods and services. The multiplier effort from replication of the LME five module assessment and management strategy is of global significance in a growing movement toward the realization of the WSSD marine targets.
2. Cost Saving: The LME projects can link with GEO to reduce redundant data collection, management and analyses.
3. Integrated Analysis: Data sharing, complementarily, and interoperability among partners allow for global scale analyses that would not otherwise be performed.
4. Capacity Building: This will provide data, decision and support tools for monitoring changes in LME productivity, fish and fisheries, pollution and ecosystem health, and the effects of climate change for improved ecosystem-based management in the world's 64 Large Marine Ecosystems.

Relevance to Societal Benefit Areas and Transverse Areas

The world's 64 LME's are areas of ocean characterized by distinct bathymetry, hydrography, productivity, and trophic interrelationships. They annually produce 95% of the world's marine fish catch. They are natural and regional focal areas of the global effort to recover depleted fish stocks, restore damaged habitats and reduce and control coastal pollution. The data and information provided by the GEF-supported LME projects contribute significantly to:

- Improve the management and protection of coastal marine ecosystems;
- Improve the socioeconomic benefits to coastal communities in Africa, Asia, Latin America and Eastern Europe from LME goods and services;
- Improve global scale assessments of climate change in relation to the variable effects at the LME scale;
- Improve the capacity of developing countries to join the community of nations in monitoring, assessing and predicting the effects of environmental factors effecting human health and well being.

Relevance to GEO

LME projects will improve the management and protection of terrestrial, coastal and marine ecosystems, which will ultimately improve the information content needed to address the nine societal benefits (Work Plan Task Numbers indicated):

- Engaging Donors (CB-07-01a)
- Building National and Regional Capacity (CB-07-01d)
- Seamless Weather and Climate Prediction System (CL-07-01)
- DEM Interoperability (DA-07-01)
- Higher Level Data Product Tools (DA-07-05)
- Environment and Health Monitoring and Modeling (HE-07-02)
- Millennium Development Goals (US-07-02)
- Environmental Risk Management (US-07-03)

Participants

Institutions, Government Agencies, and Ministries of the Environment, Fisheries, Energy, Tourism, and Finance from 110 countries around the world, as well as partnerships underway with NOAA and the GEF, World Bank, UNIDO, UNEP, UNDP, IOC- UNESCO, FAO, IUCN and WWF.

Current Status and Next Steps

- Long term continuity – The start up funding of \$1.8 billion is expected to increase to \$3.0 billion during the next 24 months. Each of the LME projects is programmed for two phases of 5 years each. At the conclusion of 10 years these projects are expected to continue with self-financing provided by national and trans-boundary stakeholders including the fishing industry, petroleum industry, transport industry, tourism industry, and other revenue streams justified on the basis of the \$12.6 trillion annual economic contribution from the goods and services of LMEs to the global economy.
- Gaps – The LME approach to the assessment and management of marine resources and their environments is targeted for an increase of \$230 million by the GEF International Waters focal area during the GEF 2007-2010 replenishment period. Among the LMEs in the funding pipe-line is the West Bering Sea LME, presently stressed by ice melt, and the Sulu-Celebes LME, under stress from coastal pollution, habitat loss, and over-fishing.
- Next Steps – The northern hemisphere countries are expected to lend their assistance to developing countries in the \$1.2 billion expansion of ongoing GEF-supported projects over the next 24 months, in a planned effort by UN agencies to stimulate North-South and South-South collaboration in LME projects.