

# **Monitoring and Evaluation Indicators for GEF International Waters Projects**

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# Monitoring and Evaluation Indicators for GEF International Waters Projects

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Effective monitoring and evaluation (M&E) is increasingly recognized as an indispensable tool in project and program management. If done well, an M&E plan and the indicators developed as part of it serve both as a corrective function during the project cycle, enabling timely adjustments, and as a guide to structuring future projects more effectively. All GEF projects must include M&E provisions. The intent of this paper is to describe the role of M&E relative to GEF's international waters focal area and to more specifically identify an indicator framework for countries to employ as part of the M&E process related to international waters.

The indicator framework presented in this report is based on work started in 1996 by the former GEF International Waters Task Force (IWTF). The indicator framework pertains primarily to the two main operational programs in the international waters focal area: the Waterbody-Based Operational Program (OP8) and the Integrated Land and Water Multiple Focal Area Operational Program (OP9). The Contaminant-Based Operational Program (OP10) represents a different approach and consists of a collection of very unique types of interventions. Therefore, this present framework does not cover it; indicators for Operational Program 10 will be developed at a later stage.

The IWTF developed a series of three types of indicators based on their identification in *GEF Operational Programs* (GEF, 1997) as important elements of OP8 and OP9 projects. The three types of indicators are:

1. Process indicators
2. Stress reduction indicators
3. Environmental status indicators.

This paper describes the background and philosophy for the three types of indicators, summarizes the framework, and includes several examples from GEF international waters projects. It updates earlier drafts with the lessons of experience from GEF international waters projects, particularly the ones examined in the Multicountry Project Arrangements Thematic Review carried out under the auspices of the GEF M&E Unit in 1999-2000 (Ollila et al., 2000).

## **International Waters Operational Strategy**

The *Operational Strategy* (GEF, 1996a) defines GEF's objective in the international waters focal area as: to contribute primarily as a catalyst in the implementation of a more comprehensive, ecosystem-based approach to managing international waters and their drainage basins as a means to achieve global environmental benefits. According to the Operational Strategy, the overall strategic thrust of GEF-funded international waters activities is to meet the agreed incremental costs of:

- Assisting groups of countries to better understand the environmental challenges of their international waters and work collaboratively to address them
- Building the capacity of existing institutions (or, if appropriate, developing the capacity through new institutional arrangements)
- Implementing measures that address priority trans-boundary environmental concerns.

The goal of GEF international waters projects is to assist countries to use the full range of technical, economic, financial, regulatory, and institutional

measures needed to operationalize sustainable development strategies for international waters.

The Operational Strategy and operational programs recognize the very different nature of international waters projects compared to other GEF focal areas. Following discussions in 1994 and 1995, the GEF Council adopted an Operational Strategy that recognizes that the reversal of environmental degradation in complex transboundary freshwater or marine situations may take decades. It was acknowledged that a series of projects with progressive GEF involvement may be needed in a specific basin or marine ecosystem to leverage the needed country reforms and investments for adequately addressing transboundary water issues. Collaborating countries often must address a whole host of scientific, social, political, institutional, cross-sectoral, and sovereignty issues through structured processes before they may commit to undertaking the required regional and country-based reforms and priority investments.

Experience from longstanding waterbody management initiatives outside the GEF—such as in the North Sea, the Rhine Basin, Lake Geneva, the Mediterranean Sea, the Baltic Sea, the Mekong River, and North America's Great Lakes—shows that these processes often take 15-20 years before meaningful commitments to joint management improvements can be secured. Additional time is needed before the transboundary water bodies actually respond to reductions in stress from pollution, over-fishing, sedimentation, eutrophication, and habitat alterations. Even multi-jurisdictional but single country efforts, such as those involving the Chesapeake Bay in the United States or the Murray-Darling Basin in Australia, may take 20 or 30 years to develop. By that time, the GEF interventions will often have ceased before actual waterbody improvements can be detected.

Consequently, experience up to 1994 illustrated that different types of M&E indicators were needed for international waters interventions to show actual step-by-step progress toward the adoption of the joint management regimes, country-based reforms, and priority investments that are necessary precursors of improvements in water quality, quantity, or biological factors detectable in transboundary systems. The

practical lessons from experience in the multicountry water bodies previously named and experiences in the transboundary basins of Africa prompted the adoption of the three levels of international waters indicators depending on the type of international waters project being proposed. The intent was that progress in achieving these M&E indicators would be reported during GEF's annual project implementation review (PIR) in order to monitor project progress. The ultimate achievement of the indicators would enable GEF interventions' effectiveness to be evaluated objectively.

### **Primary Operational Programs in International Waters**

The GEF international waters focal area is organized around three complementary operational programs (GEF, 1997). The goal of the Waterbody-Based Operational Program (OP8) is to assist countries in modifying the ways that human activities are conducted in a number of sectors so that a particular water body and its international drainage basin can sustainably support human activities. Projects in this operational program focus mainly on seriously threatened, damaged water bodies and the most imminent transboundary threats to their ecosystems. The program's long-term objective is to undertake a series of projects that help groups of countries to work collaboratively with the support of GEF implementing agencies in achieving changes in sectoral policies and activities so that transboundary environmental degradation to specific water bodies can be addressed. GEF projects in OP8 target both freshwater systems, ranging from transboundary river and lake basins to transboundary groundwater systems, and marine ecosystems, with focused, remedial actions.

The Integrated Land and Water Multiple Focal Area Operational Program (OP9) is broader in scope than the Waterbody-Based Operational Program. Its long-term objective is to achieve global environmental benefits through projects that integrate the use of sound land and water resource management strategies as a result of changes in sectoral policies and activities that promote sustainable development. Projects focus on area-wide interventions that typically involve integrated land and water resources management as

well as preventive measures to address threats rather than remedial, highly capital-intensive measures. OP9 may also provide global benefits in multiple focal areas at one time as a result of the interventions. For example, the adoption of improved catchment management may protect the biodiversity of a downstream wetland, or the adoption of integrated coastal management strategies may assist in mitigating the effects of climate change. With components devoted to the cross-cutting issue of land degradation and the specific conditions of Small Island Developing States (SIDS), projects in this operational program often involve determining what sectoral changes are needed to achieve a basin's sustainable development goals as well as what type of measures are needed to ensure that the ecological carrying capacity of the water body is not exceeded.

### **The Philosophy for Catalyzing Joint Action**

Given the number of countries and regions of the world participating in GEF projects, it is neither possible nor desirable to describe a single, static set of indicators that could be employed in all circumstances. It is not possible because a single set of indicators cannot capture effectively the breadth and depth of the type of site-specific transboundary issues countries face. The appropriate indicators would vary according to the waterbody type, ecosystem setting, nature of interventions utilized, scientific and governance capacity, and specific stresses produced by sectoral activities that result in the transboundary degradation.

The GEF international waters operational strategy aims at assisting countries to jointly undertake a series of processes with progressive commitments to action and instilling a philosophy of adaptive management. Further, it seeks to simplify complex situations into manageable components for action. Where transboundary basins are involved, it is necessary to work at three institutional levels: multicountry, national interministerial, and subnational/community levels. M&E considerations are an essential element to this adaptive management strategy. Different types of M&E indicators are then appropriate based on what stage countries are at in these joint processes. It

is expected that each GEF international waters project will have its own discrete set of indicators and that these indicators will be cooperatively developed by the participating countries, the project executing and implementing agencies, and the broad range of stakeholders within each project area.

GEF international waters projects often begin with the implementing agencies assisting the cooperating nations in undertaking strategic work that focuses on joint fact-finding. Consistent with the Operational Strategy, collaborating nations can each institute interministerial technical teams to assemble information that assesses the water-related environmental problems and conflicts in their part of the basin or marine ecosystem and share this information with colleagues from other nations in a multinational committee setting. In this way, countries can produce a transboundary analysis, often referred to as a transboundary diagnostic analysis (TDA), that contains the facts of the actual or likely future dispute, conflict, or problem and its root causes and that can be shared with key stakeholders for their views. This collaborative, factual analysis is an essential starting point for determining priorities for action and for diagnosing root causes that produce the stress on the transboundary system. Thus, the TDA can be thought of as the first step in producing a strategic action program (SAP) to address the priorities.

The TDA concept is more fully described in Box 1. This joint fact-finding activity helps bring countries together and facilitates their capacity to cooperate by initially requiring them to produce something together. Jointly producing such an analysis represents a lesson of experience learned in the early 1990s as a result of decades of talk rather than action in addressing multicountry basins or marine ecosystems around the world. In addition, the World Bank Board adopted a Water Resources Management Policy Paper in 1993 that recommended as one of the first steps to address water issues that countries undertake an assessment (basin-by-basin assessments in guidance documents created to implement the new World Bank policy) and then produce a strategy for addressing the priorities identified. The GEF Council's adoption of the use of a TDA in OP8 and OP9 incorporated these lessons of experience.

### **Box 1. Features of the Transboundary Diagnostic Analysis (TDA)**

The process of jointly developing a TDA is important for countries so that they learn to exchange information and work together. Interministerial committees are often established in each country sharing a water body to provide that country's input of factual information on the shared basin or marine ecosystem. This helps to determine the transboundary nature, magnitude, and significance of the various issues pertaining to water quality, quantity, biology, habitat degradation, or conflict. After the threat is identified, the countries can determine which issue or issues are priorities for action, relative to less significant issues and those of solely national concern. In addition, the root causes of the conflicts or degradation, and relevant social issues, are also included in the analysis so that actions to address them may be determined later. The science community from each country is often involved because the TDA is intended as a factual, technical document, and key stakeholders are expected to participate. If a stakeholder identification or social analysis was not done in preparation, it should be included in the TDA process.

This TDA process provides an opportunity for the countries to understand the linkages among the problems and the root causes of environmental issues in economic sectors. As a result, more holistic, comprehensive solutions may be identified to enable responding to many different conventions in a cost-effective manner. The TDA process allows complex transboundary situations to be broken up into smaller, more manageable components for action as specific sub-areas of degradation or priority "hotspots" are geographically identified (with their specific problem and root cause) within the larger, complex system. Some of these may be deemed high priority; others may not. In the case of the large marine ecosystems (LME) component of OP8, it is essential to examine linkages among coastal zones, LMEs, and their contributing freshwater basins as part of the TDA process so that necessary linkages to root causes in upstream basins can be included in the subsequent SAP. In this manner, different transboundary issues existing in different portions of an LME and its basins or in large river basins can be managed for the diagnosis of root causes and the development of geographically specific actions.

Once one or several priority transboundary concerns—along with their root causes in the sectoral activities of each country—are identified in a TDA, the countries would collaborate in determining the actions they will take to address those priority concerns. Their responses will be expressed in an SAP for the basin, aquifer system, or LME and adjacent basins. As noted in the Operational Strategy, the actions may consist of policy, legal, and/or institutional reforms and investments on both mul-

ticountry and national levels. The central elements of an SAP are described in Box 2. In essence, these multicountry processes in international waters are the equivalent of "enabling activities" in the other GEF focal areas that are undertaken in response to the conventions. Successful adoption of SAPs serve as a means of identifying country-driven commitments to actions that may improve the effectiveness of subsequent GEF interventions to assist in implementing those country-driven actions.

## **Box 2. Role of the Strategic Action Program (SAP)**

Once one or several priority transboundary concerns—along with their root causes in the sectoral activities of each country—are identified in a TDA, the countries would collaborate in determining the actions they will take collectively and nationally to address those priority concerns. Their responses will be expressed in a SAP for the basin, aquifer system, or LME and adjacent basins. As noted in the Operational Strategy, the actions may consist of policy, legal, and/or institutional reforms and investments on both multicountry and national levels. They are developed by each country, often through national interministerial committees with participation by stakeholders at the national and subnational levels, and are compiled and agreed upon at the multicountry level. In some cases, the development of individual national action plans (NAP), which may incorporate the reforms and investments into national economic development plans, describe the commitments by individual collaborating countries in response to the regional SAPs they have produced. If the countries wish to implement expected national (“baseline”) actions defined in the SAPs, GEF may assist them in implementing additional or “incremental” actions pertaining to the transboundary environment that are beyond the direct responsibility of any single country in the basin. The negotiation of funding for measures to address these agreed incremental costs and their packaging with baseline actions may serve as the basis for GEF international waters projects.

Summaries of SAPs from individual projects are included with project briefs on the GEF website ([www.gefweb.org](http://www.gefweb.org)), and full SAPs are included on the IW:LEARN website ([www.iwlearn.net](http://www.iwlearn.net)). The SAPs serve to identify the country-driven reforms and investments that countries pledge to seek in order to remedy damaged transboundary water systems or prevent further degradation. Stress reduction indicators are to be established to track whether implementation of the reforms and investments are proceeding. Environmental quality objectives or targets set as part of this process may be utilized to track implementation progress over time.

The UNEP-implemented South China Sea project serves as a good example of the production of an initial or framework SAP that includes a program of action establishing targets for implementation and that is accompanied by cost estimates. By certain milestone dates, the collaborating nations expect to achieve various targets related to the four components. The UNDP-implemented Benguela Current project serves as a good practice example of completing the SAP during project preparation and then implementing its agreed incremental costs through a GEF project.

## **GEF Monitoring and Evaluation**

GEF’s monitoring and evaluation policies and procedures were laid down in general terms in a recent policy document (GEF, 2002). In the GEF context, monitoring is the continuous or periodic process of collecting and analyzing data to measure the performance of a program, project, or activity. As an integral and continuing part of project/program management, it provides managers and stakeholders with regular feedback on implementation and progress towards the attainment of global environmental objectives. Monitoring enables management to take appropriate corrective action in project design or implementation, as the case may be, to achieve desired results. Reporting to GEF on the achievement of certain indicators

can also help improve objectivity in the annual PIR process. In extreme cases, it can also help to determine whether a project or program continues to be relevant. Effective monitoring requires baseline data; indicators of performance and related measurements; activities such as field visits, stakeholder consultations, and regular reporting; and a feedback mechanism for management decision-making. Monitoring is an essential part of the entire life cycle of a GEF project or program.

Evaluations are systematic and independent assessments of ongoing or completed projects or programs, along with their design, implementation, and results, that aim to determine the relevance of objectives, development efficiency, effectiveness, impact, and

sustainability. The implementing agencies undertake interim evaluations during implementation as a first review of progress, a projection of likely impact, and a means to identify necessary adjustments to accomplish the indicators established for success. Mid-term reviews (MTR) constitute such an evaluation and adjustment tool. If conducted at the end of the project/program cycle, they may be called terminal evaluations and determine project/program impacts, sustainability of the impacts, and, in the GEF context, contributions to global environmental benefits and the transboundary water improvements in this focal area.

The Logical Framework Approach (LFA) is the tool for developing and monitoring the logical relationship between inputs, outputs, and objectives/goals that determines the implementation of a project via identification, formulation, appraisal, implementation, monitoring, and evaluation. Indicators are quantitative or qualitative statements that can be used to describe existing situations and measure changes or trends over time. In the context of the LFA, an indicator defines the performance standard that, when reached, represents achievement of an objective. GEF international waters projects should include the identification of the appropriate process, stress reduction, and/or environmental status indicators as part of developing logical frameworks to help assess project achievements.

### **International Waters M&E Framework**

In the recent past, most international waters projects have included a paragraph in the project brief indicating that GEF international waters indicators will be developed for the project. The framework presented in OP8 and OP9 that the IWTF has discussed extensively is based upon a series of process indicators, stress reduction indicators, and environmental status indicators. These indicators are employed over the full life of the project, from project preparation during the project development (PDF-B) process to the end of the project cycle. The indicators, particularly the environmental status indicators that are agreed on by collaborating nations, would stay in use beyond GEF-funded interventions, as GEF provided a catalytic intervention toward joint action to determine the environmental status indicators appropriate for nations' shared basins and marine ecosystems.

### *Process Indicators*

The establishment of process indicators is essential to characterize the completion of institutional processes on the multicountry level or the single-country national level that will result in joint action on needed policy, legal, and institutional reforms and investments that aim to reduce environmental stress on transboundary water bodies. Traditionally, process indicators have been a measure of progress in project activities involving procurement and production (inputs and outputs) of goods, physical structures, and services. Capacity and human resource development and stakeholder involvement have also been recognized as important to achieving sustainable project outcomes (GEF, 1996b). The complex nature of many GEF international waters projects requires that there be additional process indicators adopted to reflect the extent, quality, and eventual on-the-ground effectiveness of the multicountry, interministerial, and cross-sectoral efforts that are at the heart of the GEF international waters approach. GEF's reliance on collaborative processes that result in identifying priorities in a TDA, and seeking reforms and investments to address those priorities in an SAP, demonstrates the need for a broad array of process indicators that may capture the successful completion of those processes.

A particular characteristic of international waters projects is the length of time that is generally required before actual changes can be detected in the transboundary water environment, especially for the complex restoration of damaged waters under OP8. Process indicators demonstrate actual, on-the-ground institutional and political progress in the often time-consuming, step-by-step journey to solving these complex problems. These process indicators assist in tracking the domestic and regional institutional, policy, legislative, and regulatory reforms necessary to bring about change. Seen in this light, identifying effective process indicators is likely to be the most important indicator of success in an initial GEF international waters intervention. While these projects can conduct demonstration actions to help treat the symptoms of the problems, their root causes in policies, institutions, and/or laws also have to be monitored.

Process indicators may be appropriate at various stages of maturity in multicountry cooperation for

addressing transboundary water issues. In the initial, strategic stages of multicountry projects, regional process indicators, such as establishing country inter-ministerial committees or formulating an SAP, may be the only types of appropriate indicators. Further into implementation, national process indicators, such as a country ratifying the regional convention, enacting legal reforms, instituting regulatory programs, or seeking investment financing, become more important.

#### *Examples of Process Indicators*

The following are examples of regional process indicators:

- Establishment of country-specific interministerial committees to engage key ministries that may be involved with reducing sectoral stresses on the water body
- Formation and documentation of high-level steering committee meetings for project preparation and implementation
- Completion of a country-endorsed TDA that establishes priorities, identifies root causes of the transboundary priorities, and is endorsed by countries
- Documentation of stakeholder involvement in preparation and creation of a stakeholder involvement plan (including information dissemination, consultation, and participation) for the project
- Completion of a country-endorsed SAP containing both regional and country-specific policy, legal, and institutional reforms and priority investments that address the top transboundary priorities
- High-level political commitment to follow up joint action as signified by, among other things, ministerial-level declarations or adoption of a joint legal/institutional framework
- Adoption of a science advisory panel in the joint institutional framework to bring sound science advice into the joint transboundary work
- Adoption of an M&E plan during project preparation that includes establishment of process indicators, stress reduction indicators, and environmental status indicators.

The following are examples of national process indicators:

- Country adoption of specific water, environment, or sector-related legal reforms, policies, institutions, standards, and programs necessary to address the transboundary priority issues, including stakeholder participation programs
- Country ratification of the regional or global conventions and protocols pertinent to the project
- Country commitments to report progress in achieving stress reduction indicators as well as environmental status data to the regional or joint institution
- Incorporation of country assistance strategies (CAS) in the World Bank or regional development bank or UNDP country-level strategic results framework (SRF).

#### *Stress Reduction Indicators*

Stress reduction indicators relate to the specific on-the-ground measures implemented by the collaborating countries. Often a combination of stress reduction indicators in several nations may be needed to produce detectable changes in transboundary waters. Whereas process indicators relate to the needed reforms or programs, stress reduction indicators represent documentation that an on-the-ground action occurred. Such actions include, for example, an enforcement action on an industrial pollution discharge that resulted in less pollution loading, an investment that helped a municipal sewage treatment plant reduce nitrogen loading, or larger-sized mesh net regulations being enforced for a fishery.

#### *Examples of Stress Reduction Indicators*

- Point source pollution reduction investment completed (kg pollutants)
- Non-point source pollution programs implemented (area treated with best management practices; kg reduced)
- Amount of underwater or wetland area placed into protected management, including the establishment of no fishing zones

- Amount of eroded land stabilized by tree planting (estimated sedimentation reduction)
- Amount of fishing fleet removed (through alternative livelihoods)
- Larger mesh fishnet policy enforced, fishing restrictions, marine protected area established
- Reduced releases of pollution to groundwater recharge zones
- Additional releases of water from dams for environmental purposes

### *Environmental Status Indicators*

For projects in damaged transboundary systems, years may go by before a sufficient number of countries have implemented sufficient stress reduction measures to enable a change to be detected in the transboundary water environment. For the projects in OP9 that mainly address protection measures, as well as land degradation, maintenance of good quality indicators rather than improvements may be the objective. In both cases, collaborating countries must harmonize their sampling, laboratory, and analysis methods so that they all agree on what water quality, quantity, or ecosystem parameters (living resources) should be sampled to track progress toward a goal.

These agreed environmental status indicators are measures of actual performance or success in restoring and protecting the targeted water body. They should be established jointly by countries in GEF projects so that they can be monitored by countries undertaking harmonized monitoring programs and reported to the relevant parties and stakeholders. Social

indicators may also be appropriate here to measure whether communities and stakeholders benefit from the changes in environmental conditions brought about by the project.

### *Examples of Environment Status Indicators*

- Measurable improvements in trophic status
- Improved (measurable) ecological or biological indices
- Improved (measurable) chemical, physical (including flow regimes), or biological parameters
- Improved recruitment classes of targeted fish species, diversity, or keystone species
- Demonstrable reduction of persistent organic pollutants (POPs) in the food chain
- Changes in local community income and social conditions (stable or not worsened by the GEF intervention and, in some cases, improved) as a result of improvements in environmental conditions
- Demonstrable recovery of key flagship species or values as a result of changed rule (operating) curves for dams or vegetative response from wetland re-inundation
- Improved hydrologic balance as increases occur in the number of hectares of trees as a result of reforestation programs
- Increased stakeholder awareness and documented stakeholder involvement

# Annex A: Examples of M&E Indicators in GEF International Waters Projects

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## **Water and Environmental Management in the Aral Sea Basin (World Bank)**

The water and salt management component and the wetlands management component of the Aral Sea basin project in OP9 include performance monitoring indicators that are consistent with the international waters indicators (World Bank, 1998).

For example, process indicators include:

- Adoption of a regional water and salt management policy
- Agreement among the five participating nations on interstate water use and environmental sustainability
- Adoption by the governments of each nation of national policy, strategy, and action programs to reduce salinity and reduce irrigation water use by 15 percent.

Stress reduction indicators include:

- Reduction of irrigation water use by 15 percent, which increases effective water flow to delta wetlands by some 15 percent
- Reductions in soil salinity in line with targets
- Achievement of sustainable levels of investment in the effective management of water resources and salinity from private and public sources.

Environmental status indicators include:

- River salinity in line with targets
- Decreased salinity levels of delta lake
- Increased dissolved oxygen levels in delta lake
- Increased flows to delta lake
- Increased number of migratory birds
- Environment of the delta Lake Sudoche is stable and sustainable from a biodiversity standpoint
- Income of local population rises.

## **Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand (UNEP)**

The seven-country, strategic, South China Sea project in OP8 effectively uses the project logical framework to express the objectively verifiable M&E indicators, most of them process indicators. As a recent project, it also illustrates the accelerated approach adopted by the IWTF in which completion of necessary strategic work is combined along with on-the-ground demonstration activities so that all three institutional levels of activity can be harnessed (intergovernmental, national interministerial, and subnational/community). Of great significance is the adoption during project preparation of stress reduction indicators and environment status indicators—proposed numerical targets

included in the draft SAP—that will be finalized by the full project. These numerical indicators address the priority issues identified by the countries in their draft TDA at 35 pollution hotspots and 26 sensitive areas and in the Gulfs of Thailand and Tonkin. The issues identified as transboundary priorities in the draft TDA, which also was produced during project preparation, can be summarized, in priority order, as: (1) habitat degradation and loss of mangroves, coral reefs, seagrasses, and wetlands, (2) over-exploitation of fisheries, (3) land-based sources of pollution consistent with the Global Plan of Action (GPA), and (4) the critical absence of regional agreements for cooperation for the protection and sustainable management of the marine and coastal ecosystem (UNEP, 2000).

Process indicators include:

- Country interministerial committees formed
- TDA finalized and endorsed
- SAP finalized and endorsed at the intergovernmental level
- Development and country adoption of national action plans (NAPs) or the reforms and investments each country will need to undertake
- Regional adoption of water quality objectives and standards for the marine systems
- Adoption of management plans for individual demonstration sites
- Development and adoption of a mechanism for regional management of the environment of the South China Sea.

Stress reduction indicators will be established in the project and incorporated into each country's NAP.

Environmental status indicators relate to achieving targets that involve:

- Maintaining mangroves, non-oceanic coral reefs, sea grasses, and wetlands

- Determining and meeting regional catch levels of fisheries that preserve the resource base
- Adopting water quality objectives, ambient standards, and effluent standards for land-based sources that can be enforced to achieve the appropriate quality of water to sustain the marine ecosystem.

The regional task forces will develop these indicators as part of this strategic project.

### **Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem (UNDP)**

Various international waters M&E indicators are expressed in the logical framework of this OP8 project. Process indicators vary from the TDA being prepared and agreed to by the countries by year 2 to the SAP formulated and endorsed by the countries at the ministerial level by year 4. Furthermore, country-specific Yellow Sea NAPs will be adopted by nations to list the national process indicators (like enactment of legal reforms) and stress reduction actions (like pollution discharge reductions as part of an investment strategy) that will be undertaken. A stakeholder participation strategy, actions by country interministerial committees, and a regional agreement for sustainable utilization of fisheries by year 3 are other important indicators of key processes to be achieved in the project.

Various stress reduction indicators will be developed during the project to characterize regional and country actions to reduce overexploitation, improve water quality, establish marine protected areas, and slow biodiversity loss. These indicators will be included in the Yellow Sea NAPs by year 3.

Environmental status indicators are to be developed and agreed to by year 3. As noted in the logical framework matrix, they would define improvements in catch-per-unit effort by year 5, improved water quality for target contaminants by year 5, reversal of proliferation of harmful algal blooms, and reductions in biodiversity loss (UNDP, 2000).

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